STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (BRIDGE)

Version
LRFD

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TEMPORARY BRIDGE SHEETS

1	MABEY FOUNDATION DETAIL SHEET 1	09-02-2011
2	MABEY FOUNDATION DETAIL SHEET 2	09-02-2011

EXISTING STRUCTURE SHEETS

	LAYOUT	12-01-1972
	PROFILE	09-12-1974
	CULVERT DETAILS	01-10-1975
	INLET HEADWALL DETAILS	01-10-1975

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: May 2016

DRAINAGE AREA : 5.1 sq. mi.
CHARACTER OF TERRAIN : Mountainous, mostly forested, rural
STREAM CHARACTERISTICS : Sinuous and alluvial
NATURE OF STREAMBED : Gravel and cobbles

PEAK FLOW DATA - ANNUAL EXCEEDANCE PROBABILITY (AEP)

43% =	310 cfs	2% =	1120 cfs
10% =	660 cfs	1% =	1310 cfs
4% =	890 cfs	0.2% =	1830 cfs

DATE OF FLOOD OF RECORD: Unknown
ESTIMATED DISCHARGE: Unknown
WATER SURFACE ELEV.: Unknown
NATURAL STREAM VELOCITY : @ 2% AEP = 12.0 fps
ICE CONDITIONS : Moderate
DEBRIS: Light to moderate
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? No
IS ORDINARY RISE RAPID? No
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? No
IF YES, DESCRIBE:

WATERSHED STORAGE: <1%
HEADWATERS:
UNIFORM: X
IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: CGMPPA
YEAR BUILT: 1977
CLEAR SPAN(NORMAL TO STREAM): 15' - 10"
VERTICAL CLEARANCE ABOVE STREAMBED: 10' - 8"
WATERWAY OF FULL OPENING: 132 sq. ft.
DISPOSITION OF STRUCTURE: Remove and replace
TYPE OF MATERIAL UNDER SUBSTRUCTURE: See borings

WATER SURFACE ELEVATIONS AT:

43% AEP =	494.5'	VELOCITY =	10.4 fps
10% AEP =	496.7'	"	11.0 fps
4% AEP =	498.0'	"	14.5 fps
2% AEP =	499.4'	"	15.5 fps
1% AEP =	500.4'	"	16.3 fps

LONG TERM STREAMBED CHANGES: Scour hole at outlet

IS THE ROADWAY OVERTOPPED BELOW 1% AEP: No
FREQUENCY: N/A
RELIEF ELEVATION: 511.4'
DISCHARGE OVER ROAD @ 1% AEP: None

UPSTREAM STRUCTURE

TOWN: Duxbury
DISTANCE: 1000'
HIGHWAY # : Th 37
STRUCTURE #: 7
CLEAR SPAN:
CLEAR HEIGHT:
YEAR BUILT:
FULL WATERWAY:
STRUCTURE TYPE:

DOWNSTREAM STRUCTURE

TOWN: Duxbury
DISTANCE: 7000'
HIGHWAY # :
STRUCTURE #:
CLEAR SPAN:
CLEAR HEIGHT:
YEAR BUILT:
FULL WATERWAY:
STRUCTURE TYPE: Confluence with Winooski River

PROPOSED STRUCTURE

STRUCTURE TYPE: Precast Conspan Arch

CLEAR SPAN(NORMAL TO STREAM): 28'
VERTICAL CLEARANCE ABOVE STREAMBED: ~8.5'
WATERWAY OF FULL OPENING: 195 sq. ft.

WATER SURFACE ELEVATIONS AT:

43% AEP =	493.4'	VELOCITY=	7.0 fps
10% AEP =	494.8'	"	8.7 fps
4% AEP =	495.6'	"	9.8 fps
2% AEP =	496.3'	"	10.7 fps
1% AEP =	498.8'	"	11.1 fps

IS THE ROADWAY OVERTOPPED BELOW 1% AEP: No
FREQUENCY: N/A
RELIEF ELEVATION: 511.4'
DISCHARGE OVER ROAD @ 1% AEP: None

BRIDGE LOW CHORD ELEVATION: 499.8'
FREEBOARD: @ 2% AEP = 3.5'

SCOUR: Contraction scour at 0.5% AEP = 2.0'. Design foundations to be 6.0' below streambed.
REQUIRED CHANNEL PROTECTION: Stone Fill Type III*

PERMIT INFORMATION

		DEPTH OR ELEVATION:
AVERAGE DAILY FLOW:	-	
ORDINARY LOW WATER:	-	-
ORDINARY HIGH WATER:	135 cfs	-

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: Bridge
CLEAR SPAN (NORMAL TO STREAM): Minimum clear span 35'
VERTICAL CLEARANCE ABOVE STREAMBED: Minimum low beam elev. = 495.0'
WATERWAY AREA OF FULL OPENING: 250 sq. ft. minimum

ADDITIONAL INFORMATION

*Rebuild channel through structure with E-stone type E3

TRAFFIC MAINTENANCE NOTES

1. MAINTAIN TWO-WAY TRAFFIC ON A TEMPORARY BRIDGE.
2. TRAFFIC SIGNALS ARE NOT NECESSARY.
3. SIDEWALKS ARE NOT NECESSARY
4. THE APPROACHES FOR THE TEMPORARY BRIDGE SHALL BE PAVED.

DESIGN VALUES

1.	DESIGN LIVE LOAD		HL-93
2.	FUTURE PAVEMENT	d_P:	3.0 INCH
3.	DESIGN SPAN	L:	28.00 FT
4.	MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ:	---
5.	PRESTRESSING STRAND	f_y:	---
6.	PRESTRESSED CONCRETE STRENGTH	f'_c:	---
7.	PRESTRESSED CONCRETE RELEASE STRENGTH	f'_{ci}:	---
8.	CONCRETE, HIGH PERFORMANCE CLASS AA	f'_c:	---
9.	CONCRETE, HIGH PERFORMANCE CLASS A	f'_c:	---
10.	CONCRETE, HIGH PERFORMANCE CLASS B	f'_c:	3.5 KSI
11.	CONCRETE, CLASS C	f'_c:	3.0 KSI
12.	REINFORCING STEEL	f_y:	60 KSI
13.	STRUCTURAL STEEL AASHTO M270	f_y:	---
14.	NOMINAL BEARING RESISTANCE OF SOIL	q_n:	---
15.	SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	---
16.	NOMINAL BEARING RESISTANCE OF ROCK	q_n:	34.5 KSF
17.	ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	0.45
18.	PILE RESISTANCE FACTOR	ϕ:	---
19.	LATERAL PILE DEFLECTION	Δ:	---
20.	BASIC WIND SPEED	V_{3s}:	---
21.	MINIMUM GROUND SNOW LOAD	p_g:	---
22.	SEISMIC DATA — PGA: 0	S_s:	---
		S_1:	---
23.			
24.			---
25.			---
26.			---

LRFR LOAD RATING FACTORS

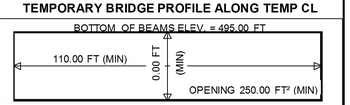
LOADING LEVELS	TRUCK						
	H-20	HL-93	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEM
TONNAGE	20	36	36	66	30	34.5	38
INVENTORY							
POSTING							
OPERATING							
COMMENTS:							

FABRICATOR TO PROVIDE LOAD RATING (SEE GENERAL NOTES)

AS BUILT "REBAR" DETAIL

LEVEL I	LEVEL II	LEVEL III
TYPE:	TYPE:	TYPE:
GRADE:	GRADE:	GRADE:

TEMPORARY BRIDGE PROFILE ALONG TEMP CL



TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2016	3800	500	54	5.7	280
2036	4300	560	54	9.6	530

20 year ESAL for flexible pavement from 2016 to 2036 : 1564000
40 year ESAL for flexible pavement from 2016 to 2056 : 3728000
Design Speed : 40 mph

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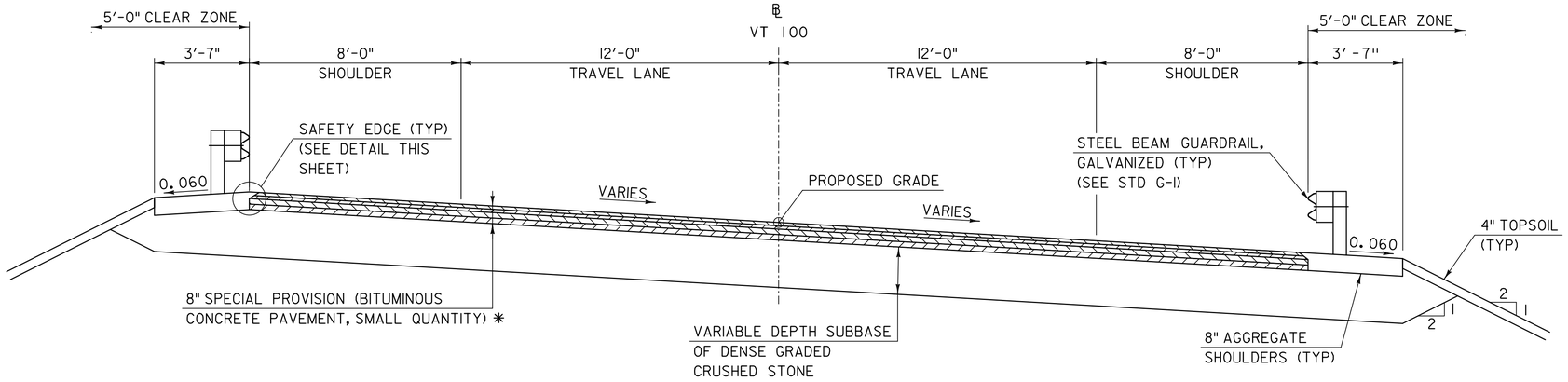
T.Y. LIN INTERNATIONAL

PROJECT NAME: **DUXBURY**
PROJECT NUMBER: **BF 013-4(47)**

FILE NAME: z16b001pi.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: J.OLUND
PRELIMINARY INFORMATION SHEET 1

PLOT DATE: 5/19/2016
DRAWN BY: S. MORGAN
CHECKED BY: J. HOWE
SHEET 2 OF 69



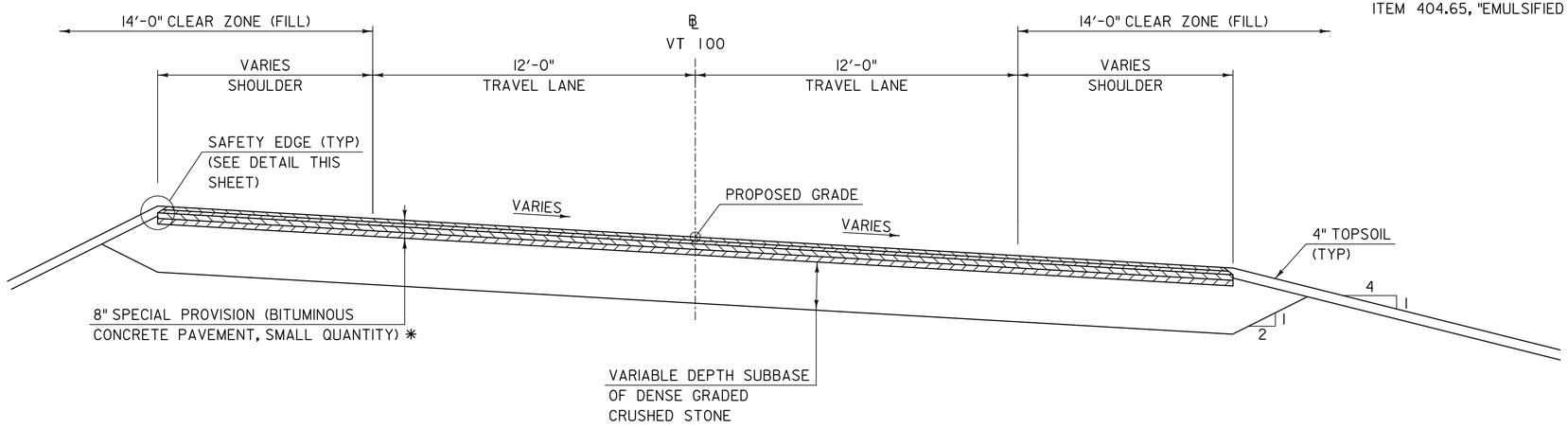
* 1½" TYPE IVS OVER
1½" TYPE IVS OVER
2½" TYPE IIS OVER
2½" TYPE IIS

ROADWAY TYPICAL SECTION WITH GUARDRAIL

SCALE ⅜" = 1'-0"

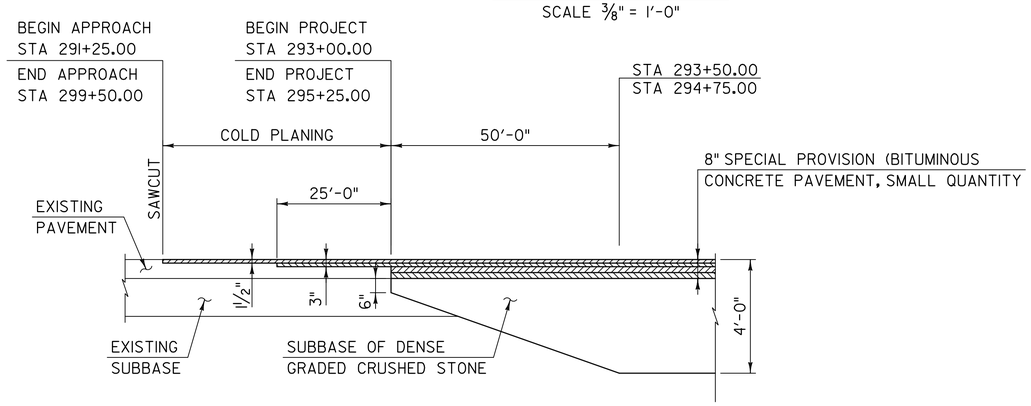
MATERIAL TOLERANCES (IF USED ON PROJECT)	
SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- ¼"
- AGGREGATE SURFACE COURSE	+/- ½"
SUBBASE	+/- 1"
SAND BORROW	+/- 1"

NOTE: EMULSIFIED ASPHALT SHALL BE APPLIED TO ALL COLD PLANED BITUMINOUS CONCRETE PAVEMENT SURFACES AND BETWEEN ALL LIFTS OF PAVEMENT AT THE RATE OF 0.04 GAL/SY OR AS DIRECTED BY THE ENGINEER. PAYMENT WILL BE MADE UNDER ITEM 404.65, "EMULSIFIED ASPHALT."



ROADWAY TYPICAL SECTION WITHOUT GUARDRAIL

SCALE ⅜" = 1'-0"



APPROACH SECTION

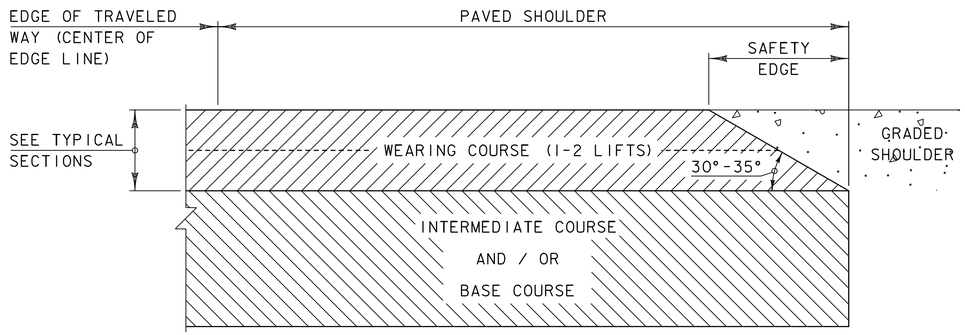
(NOT TO SCALE)

SAFETY EDGE NOTES

1. LEVELING COURSE MAY INCLUDE THE "SAFETY EDGE" AT THE CONTRACTOR'S CHOICE.

2. THE EDGE OF PAVEMENT SHALL BE FORMED IN SUCH A WAY THAT THE BITUMINOUS CONCRETE PAVEMENT IS EXTRUDED OR COMPRESSED TO FORM THE 30 TO 35 DEGREE ANGLE. DEVICES THAT SIMPLY STRIKE-OFF THE MIX WITHOUT PROVIDING ANY COMPACTIVE EFFORT WILL NOT BE ALLOWED.

3. THE PAVED SHOULDER EXTENDS FROM THE EDGE OF TRAVELED WAY TO THE EDGE OF THE WEARING COURSE, INCLUDING THE "SAFETY EDGE".



SAFETY EDGE DETAIL

NOT TO SCALE

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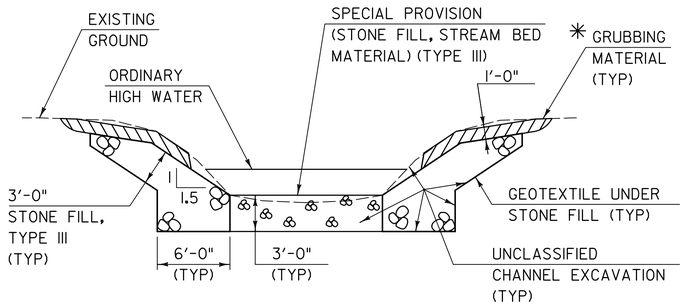
TYLIN INTERNATIONAL

PROJECT NAME: DUXBURY
PROJECT NUMBER: BF 013-4(47)

FILE NAME: z16b001typl.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: J. HOWE
TYPICAL SECTIONS AND DETAILS I

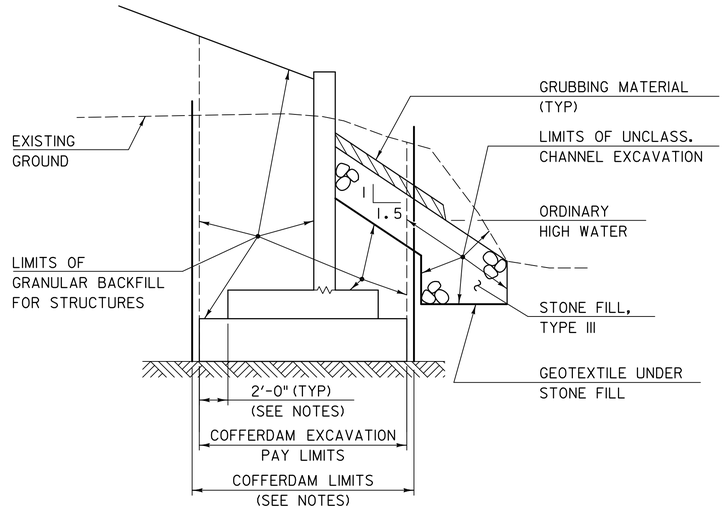
PLOT DATE: 5/20/2016
DRAWN BY: S. MORGAN
CHECKED BY: J. OLUND



TYPICAL CHANNEL SECTION

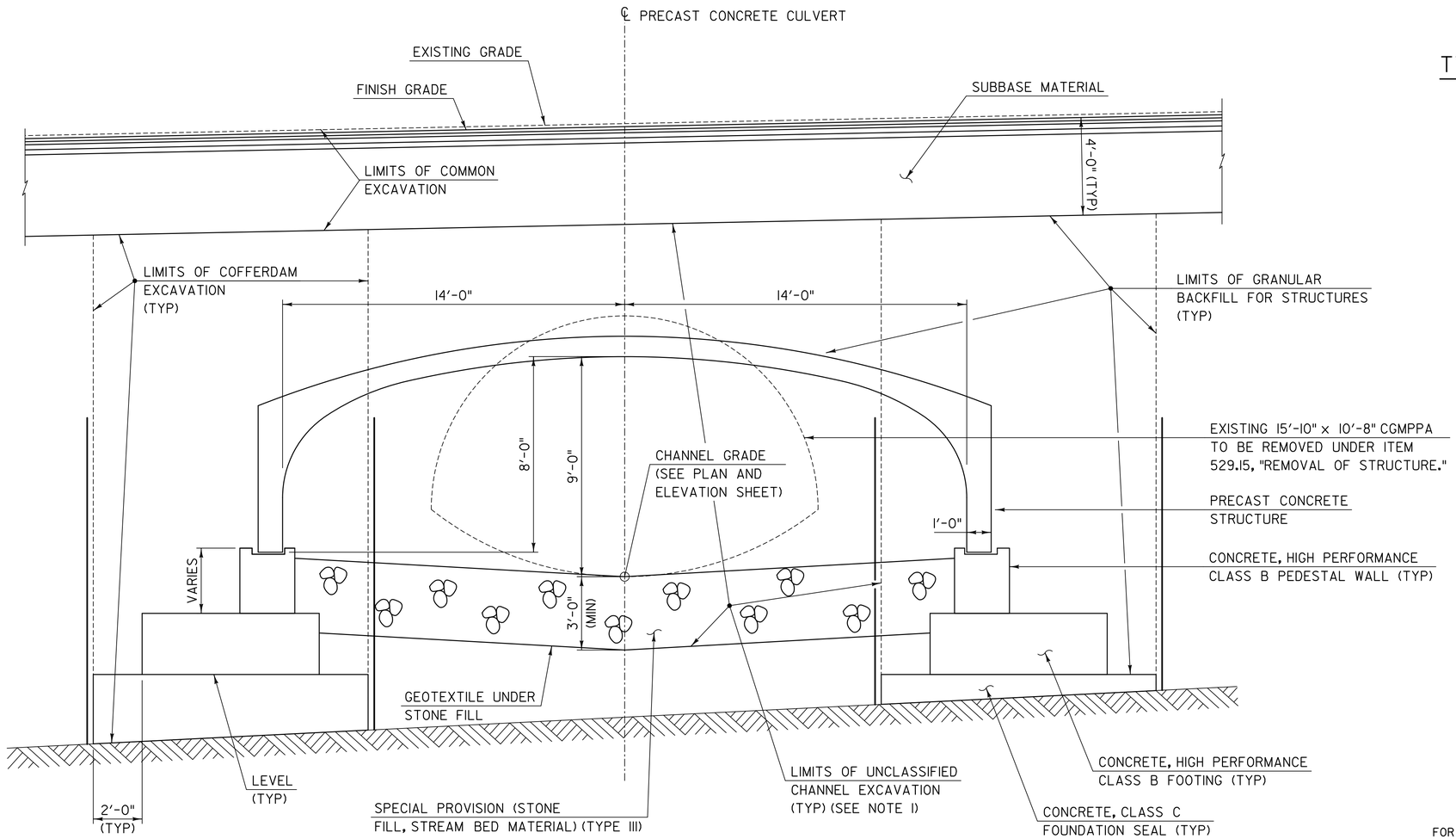
(NOT TO SCALE)

✳ GRUBBING MATERIAL SHALL NOT BE PLACED ON THE STONE FILL IN THE AREA UNDER THE BRIDGE. WHENEVER CHANNEL SLOPE INTERSECTS ROADWAY SUBBASE, GRUBBING MATERIAL SHALL BEGIN AT THE BOTTOM OF SUBBASE.



TYPICAL WINGWALL EARTHWORK SECTION

(NOT TO SCALE)



PRECAST CONCRETE CULVERT AND EARTHWORK TYPICAL SECTION

(NORMAL TO CHANNEL ALIGNMENT)
SCALE: 3/8" = 1'-0"

NOTES:

1. LIMITS EXCLUDE EXISTING CGMPPA CULVERT. REMOVAL OF LEDGE NOT REQUIRED FOR PLACEMENT OF STONE FILL.
2. THE CONTRACTOR IS MADE AWARE OF THE POTENTIAL TO ENCOUNTER EXISTING SUBSTRUCTURE REMNANTS. REMOVAL OF ANY EXISTING SUBSTRUCTURE WILL BE PAID UNDER ITEM 208.35, "COFFERDAM EXCAVATION, ROCK."
3. COFFERDAM DIMENSIONS TO BE DETERMINED BY THE CONTRACTOR.
4. THE PAY LIMITS OF EITHER "COFFERDAM EXCAVATION, EARTH" OR "COFFERDAM EXCAVATION, ROCK" SHALL BE 2'-0" OUTSIDE THE PERIMETER OF THE FOOTING AND FROM BOTTOM OF EXCAVATION UP TO THE EXISTING GROUND OR BOTTOM OF SUBBASE, WHICHEVER IS LOWER.
5. IF A COFFERDAM IS CONSTRUCTED WHICH IS LARGER THAN THE INDICATED COFFERDAM EXCAVATION PAY LIMITS, PAYMENT FOR ALL UNCLASSIFIED CHANNEL EXCAVATION, INCLUDING THAT PORTION WHICH IS INSIDE THE COFFERDAM BUT OUTSIDE THE COFFERDAM PAY LIMITS, WILL BE MADE AT THE CONTRACT UNIT PRICE FOR UNCLASSIFIED CHANNEL EXCAVATION. NO MEASUREMENT AND PAYMENT WILL BE MADE FOR COFFERDAM EXCAVATION AND GRANULAR BACKFILL FOR STRUCTURES OUTSIDE THE PAY LIMITS DEFINED IN NOTE 4.

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

PROJECT NAME: DUXBURY
PROJECT NUMBER: BF 013-4(47)

TY LIN INTERNATIONAL

FILE NAME: z16b001typ2.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: J. OLUND
TYPICAL SECTIONS AND DETAILS 2

PLOT DATE: 5/20/2016
DRAWN BY: P. BRYANT
CHECKED BY: B. TOOTHAKER
SHEET 4 OF 69

GENERAL

1. ALL MATERIALS, DESIGN, AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2011, WITH ITS LATEST REVISIONS AND THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH EDITION WITH INTERIMS THROUGH 2016.

2. ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL, AND ARE GIVEN AT 68°F, UNLESS OTHERWISE NOTED.

3. THE CONTRACTOR SHALL LOCATE WATER LINES PRIOR TO EXCAVATION FOR EXISTING STRUCTURE REMOVAL. PAYMENT WILL BE MADE UNDER ITEM 204.22, "TRENCH EXCAVATION OF EARTH, EXPLORATORY." REFER TO PROJECT SPECIAL PROVISIONS AND WATERLINE INSTALLATION SHEETS FOR ADDITIONAL INFORMATION.

EARTHWORK, REMOVAL, AND RELATED ITEMS

4. NO ONSITE DISPOSAL OF WASTE MATERIALS SHALL BE ALLOWED.

5. THE EXISTING CGMPPA, HEADWALLS AND WINGWALLS SHALL BE REMOVED IN THEIR ENTIRETY. PAYMENT FOR REMOVAL WILL BE MADE UNDER ITEM 529.15, "REMOVAL OF STRUCTURE (15.83' X 10.67' X 152' CGMPPA)."

6. THE CONTRACTOR SHALL SUBMIT FOR APPROVAL AND PROVIDE A METHOD OF MAINTAINING STREAM FLOW THROUGH THE PROJECT SITE. PAYMENT WILL BE MADE UNDER ITEM 900.645, "SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM)."

7. A LIMITED AMOUNT OF FILL IS AVAILABLE AT THE MIDDLESEX GARAGE FOR CONSTRUCTING THE TEMPORARY BRIDGE APPROACHES. SEE PROJECT SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

TRAFFIC CONTROL

8. THE EXISTING TEMPORARY BRIDGE AND CONSTRUCTION SIGNING ON EXISTING ALIGNMENT SHALL BE USED TO MAINTAIN TRAFFIC DURING CONSTRUCTION OF THE DOWNSTREAM TEMPORARY ROADWAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF EXISTING TEMPORARY BRIDGE, APPROACHES, AND SIGNING DURING CONSTRUCTION OF THE DOWNSTREAM TEMPORARY ROADWAY. ONCE TRAFFIC IS TRANSFERRED TO THE DOWNSTREAM TEMPORARY ROADWAY, THE EXISTING TEMPORARY BRIDGE SHALL BE DISMANTLED AND DELIVERED TO THE VTRANS MAINTENANCE GARAGE IN MIDDLESEX ALONG WITH ALL EXISTING CONSTRUCTION SIGNING AND TEMPORARY CONCRETE BLOCKS USED FOR SOIL RETENTION. CONTACT HOBERT GATES AT (802) 505-0910 TO MAKE ARRANGEMENTS FOR DELIVERY. PAYMENT FOR MAINTENANCE, REMOVAL, AND DELIVERY OF THE EXISTING TEMPORARY BRIDGE, CONSTRUCTION SIGNING, AND CONCRETE BLOCKS WILL BE MADE UNDER ITEM 900.645, "SPECIAL PROVISION (REMOVAL OF TEMPORARY BRIDGE)."

9. TRAFFIC SHALL BE MAINTAINED ON A TWO WAY TEMPORARY BRIDGE INSTALLED DOWNSTREAM OF THE EXISTING CULVERT AS SHOWN ON THE PLANS. THE EXISTING TEMPORARY BRIDGE ON EXISTING ALIGNMENT SHALL NOT BE USED FOR THE PROPOSED TEMPORARY BRIDGE ALONG THE PROPOSED TEMPORARY ROADWAY. SEE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION.

10. A TRAFFIC CONTROL PLAN FOR CONSTRUCTION AND OPERATION OF THE TEMPORARY ROADWAY IS PROVIDED HEREIN. THE CONTRACTOR SHALL SUBMIT FOR APPROVAL ANY NECESSARY MODIFICATIONS OR SUPPLEMENTS TO THE TRAFFIC CONTROL PLAN TO ACCOMMODATE SPECIFIC PHASING AND/OR OPERATIONS FOR THE CONTRACTOR'S INTENDED SEQUENCE OF OPERATIONS.

11. IN THE EVENT OF AN EMERGENCY VEHICLE TRAVERSING THROUGH THE PROJECT AREA, ALL WORK WILL BE IMMEDIATELY STOPPED AND A CLEAR TRAVEL LANE WILL BE PROVIDED TO THE EMERGENCY VEHICLE. WORK CREWS AND FLAGGERS WILL COMMUNICATE THROUGH RADIO AND ENSURE SAFE PASSAGE IS PROVIDED TO ALL EMERGENCY VEHICLES.

CONCRETE

12. ALL SUBSTRUCTURE CONCRETE ABOVE THE FOUNDATION SEAL SHALL BE HIGH PERFORMANCE, CLASS B.

13. FOUNDATION SEAL CONCRETE SHALL BE CLASS C.

14. ALL HORIZONTAL CONSTRUCTION JOINTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STRUCTURES DETAIL SHEET SD-502.00.

15. WATER REPELLENT, SILANE SHALL BE APPLIED TO ALL CONCRETE SURFACES EXPOSED IN THE FINAL CONDITION, WITH THE EXCEPTION OF THE UNDERSIDE OF THE PRECAST CONCRETE ARCHES.

16. ALL REINFORCING STEEL WITHIN THE PRECAST ARCH, PRECAST WINGWALLS, AND PRECAST HEADWALLS SHALL MEET THE REQUIREMENTS FOR LEVEL I, EPOXY COATED CORROSION RESISTANCE IN ACCORDANCE WITH SECTION 507, UNLESS OTHERWISE NOTED.

17. ALL REINFORCING STEEL WITHIN THE FOOTINGS AND PEDESTAL WALLS SHALL MEET THE REQUIREMENTS FOR LEVEL I CORROSION RESISTANCE IN ACCORDANCE WITH SECTION 507, UNLESS OTHERWISE NOTED.

18. MINIMUM CLEAR COVER SHALL BE AS FOLLOWS:

- ALONG TOP SURFACE OF PRECAST ARCH STRUCTURE:	2 INCH
- ALONG BOTTOM SURFACE OF PRECAST ARCH STRUCTURE:	1 ½ INCH
- PRECAST WINGWALLS AND HEADWALLS:	2 INCH
- ELSEWHERE UNLESS OTHERWISE INDICATED:	3 INCH

19. TEST BARS SHALL BE PROVIDED IN ACCORDANCE WITH THE "VERMONT AGENCY OF TRANSPORTATION MATERIAL SAMPLING MANUAL" AVAILABLE ON THE AGENCY WEBSITE.

20. THE CONTRACTOR MAY FABRICATE THE PEDESTAL WALLS AND/OR FOOTINGS USING PRECAST CONCRETE. IF THE CONTRACTOR ELECTS TO USE PRECAST CONCRETE, THE CONTRACTOR SHALL SUBMIT WORKING DRAWINGS IN ACCORDANCE WITH SECTION 105. ANY JOINTS WITHIN THE PRECAST COMPONENTS SHALL BE FULLY DESIGNED AND DETAILED BY THE CONTRACTOR AND SUBMITTED FOR APPROVAL. ALL COSTS ASSOCIATED WITH DESIGN, DETAILING, AND IMPLEMENTATION OF PRECAST CONCRETE FOR USE ON THE PROJECT SHALL BE INCLUDED IN THE APPROPRIATE PAY ITEM.

PRECAST CONCRETE ARCHES

21. VTRANS HAS ACQUIRED AND ARRANGED FOR STORAGE OF PRECAST CONCRETE ARCHES, WINGWALLS, AND HEADWALLS AT WHITE MOUNTAIN PRECAST, LLC (MICHIE CORPORATION) IN HENNIKER, NH. PRECAST COMPONENTS ARE ANTICIPATED TO BE READY FOR DELIVERY ON SEPTEMBER 26, 2016. THE CONTRACTOR SHALL COORDINATE AND PAY FOR THE LOADING AND DELIVERY OF THE PRECAST CONCRETE COMPONENTS AND INSTALL IN ACCORDANCE WITH THESE PLANS, THE CORRESPONDING FABRICATION DRAWINGS, AND SECTION 540. PAYMENT FOR COORDINATION, DELIVERY, AND INSTALLATION SHALL BE MADE UNDER ITEM 540.10, "PRECAST CONCRETE STRUCTURE (ARCHES AND WALLS)." SEE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION.

22. SHEET MEMBRANE WATERPROOFING, PREFORMED SHEET SHALL BE APPLIED TO THE TOP AND SIDES OF THE JOINTS BETWEEN ADJACENT PRECAST CONCRETE ARCHES, DOWN TO THE TOP OF PEDESTAL WALL AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH SUBSECTION 540.10. PAYMENT SHALL BE INCIDENTAL TO ITEM 540.10, "PRECAST CONCRETE STRUCTURE (ARCHES AND WALLS)".

FOOTINGS ON BEDROCK

23. FOOTINGS AND/OR FOUNDATION SEALS FOR SUBSTRUCTURES FOUNDED ON BEDROCK SHALL BE PLACED ON CLEAN ROCK. ALL LOOSE ROCK AND DEBRIS SHALL BE REMOVED; INTACT WEATHERED ROCK MAY REMAIN.

24. THE CONTRACTOR SHALL NOTIFY THE ENGINEER 3 DAYS PRIOR TO ANTICIPATED EXCAVATIONS REACHING BEDROCK ELEVATION. THE STATE GEOTECHNICAL ENGINEER SHALL WITNESS MATERIALS EXCAVATED AT OR NEAR ANTICIPATED WEATHERED BEDROCK ELEVATION TO ENSURE SUITABLE MATERIAL IS PRESENT TO ATTAIN THE NECESSARY NOMINAL BEARING PRESSURE.

25. ONCE THE ELEVATION OF BEDROCK HAS BEEN DETERMINED, THE CONTRACTOR SHALL PROVIDE A BEDROCK PROFILE TO THE ENGINEER FOR PREPARATION OF AS-BUILT DRAWINGS. FOOTING ELEVATIONS SHALL NOT BE ADJUSTED WITHOUT APPROVAL OF THE ENGINEER.

26. THE PAY LIMITS OF THE FOUNDATION SEAL SHALL BE 2 FT OUTSIDE OF THE HORIZONTAL LIMITS OF THE FOOTING AND TO THE VERTICAL LIMITS DEFINED ON THE PLANS. NO CHANGES TO THESE PAY LIMITS WILL BE MADE FOR ENCOUNTERING EXISTING CONCRETE REMNANTS OR OTHER OBSTRUCTIONS UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER. ANY CONCRETE REQUIRED FOR FOUNDATION SEALS WITHIN THE DEFINED PAY LIMITS SHALL BE PAID FOR WITH ITEM 541.30, "CONCRETE, CLASS C." AN ESTIMATED QUANTITY OF ITEM 541.30 HAS BEEN INCLUDED IN THE CONTRACT. ANY CONCRETE PLACED OUTSIDE OF THE IDENTIFIED PAY LIMITS WILL BE AT THE CONTRACTOR'S EXPENSE.

27. ANY BEDROCK THAT NEEDS TO BE REMOVED SHALL BE PAID FOR UNDER ITEM 208.35, "COFFERDAM EXCAVATION, ROCK." OVER-BREAKAGE BEYOND THE AVERAGE MAXIMUM ALLOWANCE SPECIFIED IN SUBSECTION 208.11 (C) WILL BE AT THE CONTRACTOR'S EXPENSE.

28. DOWELS SHALL BE DRILLED AND GROUTED THROUGH THE FOUNDATION SEAL (WHERE APPLICABLE) INTO BEDROCK IN LOCATIONS WHERE THE FOUNDATION SEAL IS LESS THAN 2 FT THICK OR WHERE THE FOOTING RESTS DIRECTLY UPON BEDROCK. THE DOWELS SHALL BE SPACED AND EMBEDDED AS SHOWN ON THE PLANS. PAYMENT WILL BE MADE UNDER ITEM 507.16, "DRILLING AND GROUTING DOWELS." AN ESTIMATED QUANTITY OF ITEM 507.16 HAS BEEN INCLUDED IN THE CONTRACT.

29. THE CONTRACTORS PROPOSED METHOD FOR DEWATERING THE COFFERDAM MAY BE PROVIDED WITH THE EROSION CONTROL PLAN SUBMITTAL INSTEAD OF WITH THE COFFERDAM SUBMITTAL.

ELECTRICAL

30. INSTALLATION OF THE FLASHING BEACON AND CORRESPONDING MATERIALS AND EQUIPMENT SHALL CONFORM TO SECTIONS 678 AND 679. ALL MATERIAL SHALL CONFORM TO SECTION 753. ALL CONDUCTORS SHALL BE COPPER.

31. THE EXISTING FLASHING BEACON NEAR STA 292+75, RT AND CORRESPONDING CONTROLLER CABINET SHALL BE SALVAGED AND REINSTALLED AFTER REMOVAL OF THE TEMPORARY ROADWAY. PAYMENT FOR REMOVAL AND REINSTALLATION WILL BE MADE UNDER ITEM 900.620, "SPECIAL PROVISION (RELOCATE FLASHING BEACON, GROUND MOUNTED)."

32. THE EXISTING METER AND DISCONNECT ASSOCIATED WITH THE EXISTING POWER DROP STANCHION NEAR STA 292+45, RT SHALL BE SALVAGED AND REINSTALLED AFTER REMOVAL OF THE TEMPORARY ROADWAY. PAYMENT WILL BE MADE UNDER ITEM 679.55, "POWER DROP STANCHION, STREET LIGHTING."

WATER LINE

33. THE CONTRACTOR SHALL INSTALL AN 8 INCH, CLASS 52 DUCTILE IRON WATER MAIN OVER THE PRECAST CULVERT IN ACCORDANCE WITH THE INCLUDED "WATERLINE INSTALLATION SHEETS". THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONNECTION TO EXISTING GATE VALVES AND TRANSFERRING SERVICE TO THIS NEW WATER MAIN. REMOVAL OF THE TEMPORARY WATER LINE WILL BE PERFORMED BY OTHERS.

34. THE WATER LINE SHALL BE INSTALLED DURING BACKFILL OPERATIONS OF THE CULVERT; NO TRENCH EXCAVATION AFTER COMPLETION OF BACKFILL OPERATIONS WILL BE ALLOWED.

35. PAYMENT FOR FURNISHING AND INSTALLING THE INSULATION BOARD(S) NOTED ON WATERLINE INSTALLATION SHEET C2-01 SHALL BE INCIDENTAL TO ITEM 629.24, "DUCTILE IRON PIPE, CEMENT-LINED (8") (CL 52)."

36. THE CONTRACTOR SHALL CONTACT THE WATER LINE ENGINEER A MINIMUM OF 1 WEEK PRIOR TO COMMENCING WORK ON THE WATER LINE. CONTACT JOHN PITROWISKI AT (802) 879-6331.

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

PROJECT NAME: DUXBURY
PROJECT NUMBER: BF 013-4(47)

TYLIN INTERNATIONAL

FILE NAME: z16b00lnotes.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: J. OLUND
GENERAL NOTES

PLOT DATE: 5/20/2016
DRAWN BY: S. MORGAN
CHECKED BY: D. MYERS
SHEET 5 OF 69

REMOVAL OF STRUCTURE
STA 293+51.47 LT - 294+90.57 RT

CONSTRUCT DRIVES
291+61.79 RT - 292+78.98, LT
6' PAVED APRON
292+79.23 LT - 293+16.67 LT
8' PAVED APRON

REMOVAL AND DISPOSAL OF GUARDRAIL
STA 293+11.79 - 295+52.63, LT
STA 292+80.00 - 293+46.50, RT
STA 294+79.00 - 296+63.02, RT

ADJUST ELEVATION OF VALVE BOX
STA 292+60.00, LT
STA 294+95.00, LT

STEEL BEAM GUARDRAIL,GALVANIZED
STA 293+12.95 - 294+26.01, LT
STA 294+20.80 - 296+63.02, RT

ANCHOR FOR STEEL BEAM RAIL
STA 293+26.45, LT

WIRED CONDUIT 1" SCH 80 PVC
292+43.20, RT TO 292+74.57, RT

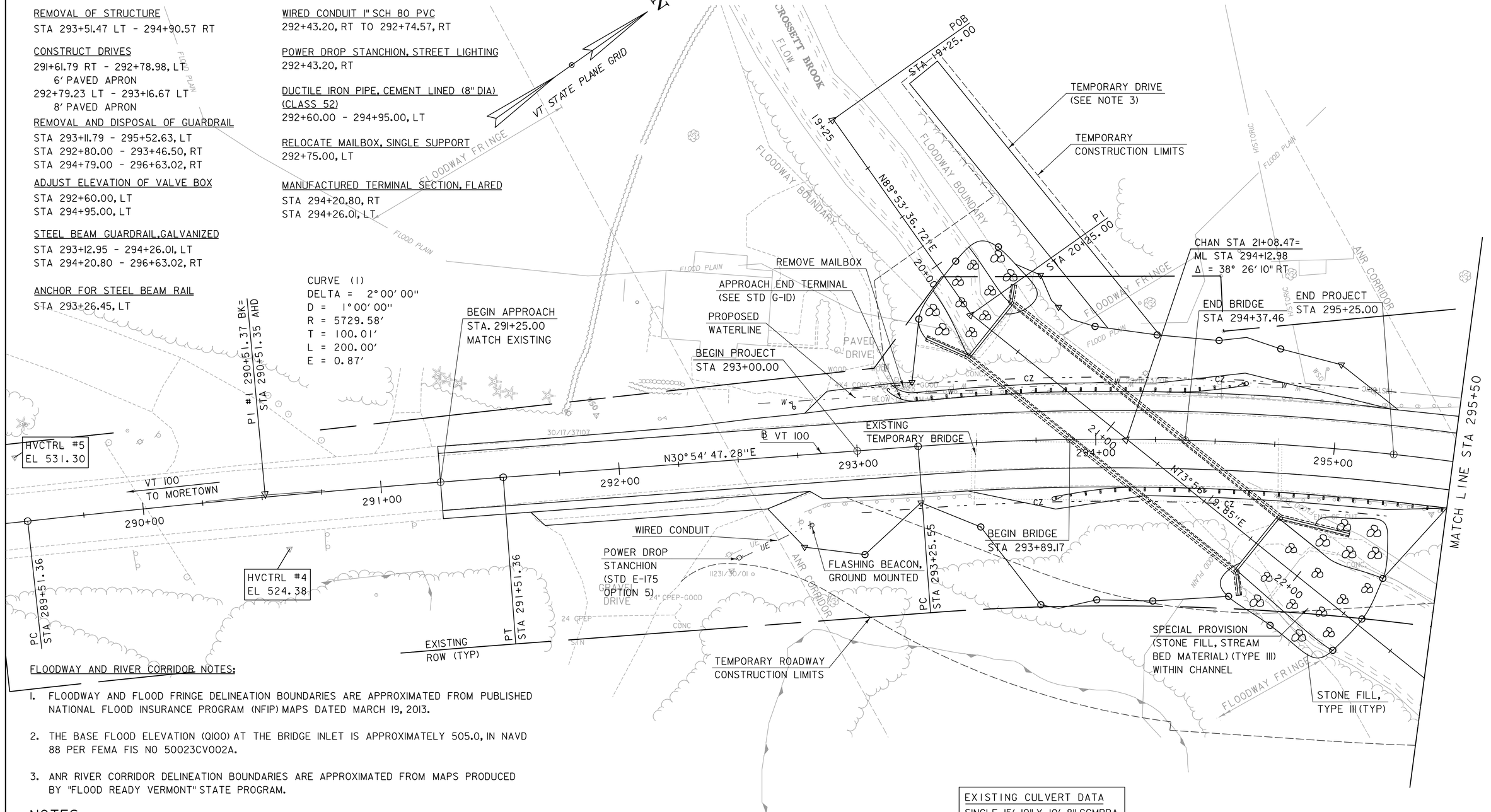
POWER DROP STANCHION, STREET LIGHTING
292+43.20, RT

DUCTILE IRON PIPE, CEMENT LINED (8" DIA)
(CLASS 52)
292+60.00 - 294+95.00, LT

RELOCATE MAILBOX, SINGLE SUPPORT
292+75.00, LT

MANUFACTURED TERMINAL SECTION, FLARED
STA 294+20.80, RT
STA 294+26.01, LT

CURVE (1)
DELTA = 2° 00' 00"
D = 1° 00' 00"
R = 5729.58'
T = 100.01'
L = 200.00'
E = 0.87'



FLOODWAY AND RIVER CORRIDOR NOTES:

1. FLOODWAY AND FLOOD FRINGE DELINEATION BOUNDARIES ARE APPROXIMATED FROM PUBLISHED NATIONAL FLOOD INSURANCE PROGRAM (NFIP) MAPS DATED MARCH 19, 2013.
2. THE BASE FLOOD ELEVATION (Q100) AT THE BRIDGE INLET IS APPROXIMATELY 505.0, IN NAVD 88 PER FEMA FIS NO 50023CV002A.
3. ANR RIVER CORRIDOR DELINEATION BOUNDARIES ARE APPROXIMATED FROM MAPS PRODUCED BY "FLOOD READY VERMONT" STATE PROGRAM.

NOTES:

1. DRIVE APRON SHALL BE ONE LIFT, 3" THICK, TYPE IVS, TO BE PAID UNDER ITEM 900.680, "SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)".
2. DISTURBED PORTIONS OF THE GRAVEL DRIVE NEAR STA 292+14, RT SHALL BE RECONSTRUCTED IN ACCORDANCE WITH STANDARD B-71 AFTER REMOVAL OF TEMPORARY ROADWAY.
3. TEMPORARY DRIVE FOR UTILITY ACCESS SHALL BE 15 FT WIDE AND CONSIST OF 1FT OF GRAVEL SUBBASE PLACED UPON GEOTEXTILE FOR STONE FILL. PAYMENT WILL BE MADE UNDER APPLICABLE ITEMS.
4. PROVIDE GUARDRAIL TERMINAL LABELS IN ACCORDANCE WITH HSD-621.06.

EXISTING CULVERT DATA
SINGLE 15'-10" X 10'-8" CGMPPA
CONSTRUCTED IN 1977
STRUCTURE LENGTH = 158'-0"

LAYOUT 1

SCALE 1" = 20'-0"
20 0 20

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

PROJECT NAME: DUXBURY
PROJECT NUMBER: BF 013-4(47)

TYLIN INTERNATIONAL

FILE NAME: z16b001bdr.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: J. HOWE
LAYOUT SHEET 1

PLOT DATE: 5/20/2016
DRAWN BY: S. MORGAN
CHECKED BY: J. OLUND
SHEET 11 OF 69

WOVEN WIRE FENCE WITH STEEL POSTS
STA 295+88.25 - STA 297+07.97, RT

REMOVAL OF EXISTING FENCE
STA 295+88.25 - STA 297+07.97, RT

ANCHOR FOR STEEL BEAM RAIL
STA 296+50.00, RT

CONSTRUCT DRIVES
STA 295+59.37 - STA 295+84.46, LT
6' PAVED APRON
STA 296+96.26 - STA 297+24.64, LT
5' PAVED APRON
STA 298+30.77 - STA 299+34.87, RT
6' PAVED APRON

CURVE (2)
DELTA = 53° 27' 02"
D = 5° 15' 00"
R = 1091.35'
T = 549.50'
L = 1018.11'
E = 130.53'
PT STA 303+43.66

PI #2 298+75.05 BK= / STA 297+94.16 AHD

VT STATE PLANE GRID

MATCH LINE STA 295+50

EXISTING ROW (TYP)

TBM #3
EL 501.75

HVCTRL #3
EL 507.44

℄ VT 100

296+00

297+00

298+00

299+00

300+00

STA 22+75.00 PI

TRAILING END TERMINAL
(SEE STD G-ID)

END APPROACH
STA 299+50.00

VT 100
TO WATERBURY

TEMPORARY ROADWAY
CONSTRUCTION LIMITS

23+00

N89° 29' 26.12"E

23+75

POE
STA 23+75.00

CROSSETT BROOK
FLOW

L.MAPLE
4X4 CONC. BND 3" BGS GOOD
2-S.MAPLE
L.SPRUCE
4X4 CONC. BND 2" BGS GOOD
SPRUCE DEAD
4X4 CONC. VTHD BND 2.5" AGS
15" CGMP GOOD
18" CGMP GOOD
HISTORIC
CROSSETT BROOK MIDDLE SCHOOL
BURKEHEAD
MAINST STOP
GATE VALVE
STONE
PLUGGED
STOP
14A 37104

LAYOUT 2

SCALE 1" = 20'-0"
20 0 20

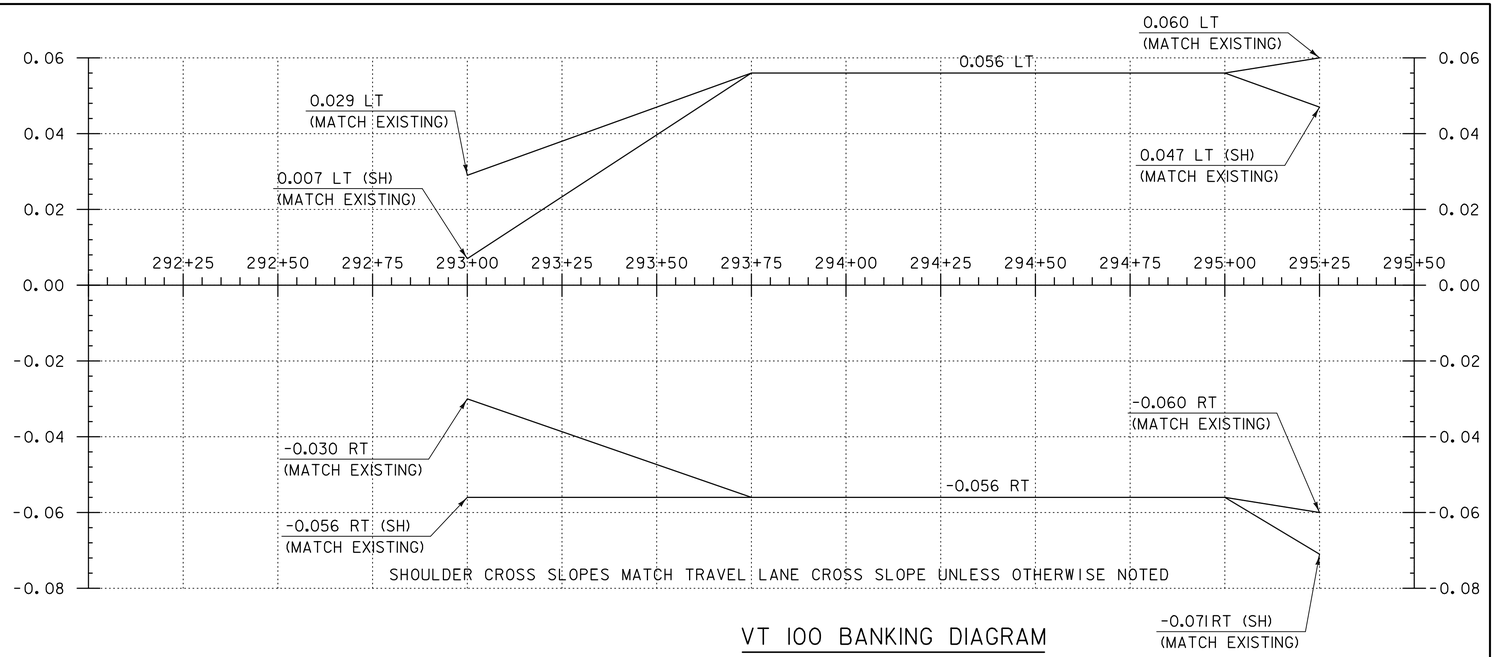
FOR REVIEW ONLY
NOT FOR CONSTRUCTION

T.Y.LIN INTERNATIONAL

PROJECT NAME: DUXBURY
PROJECT NUMBER: BF 013-4(47)

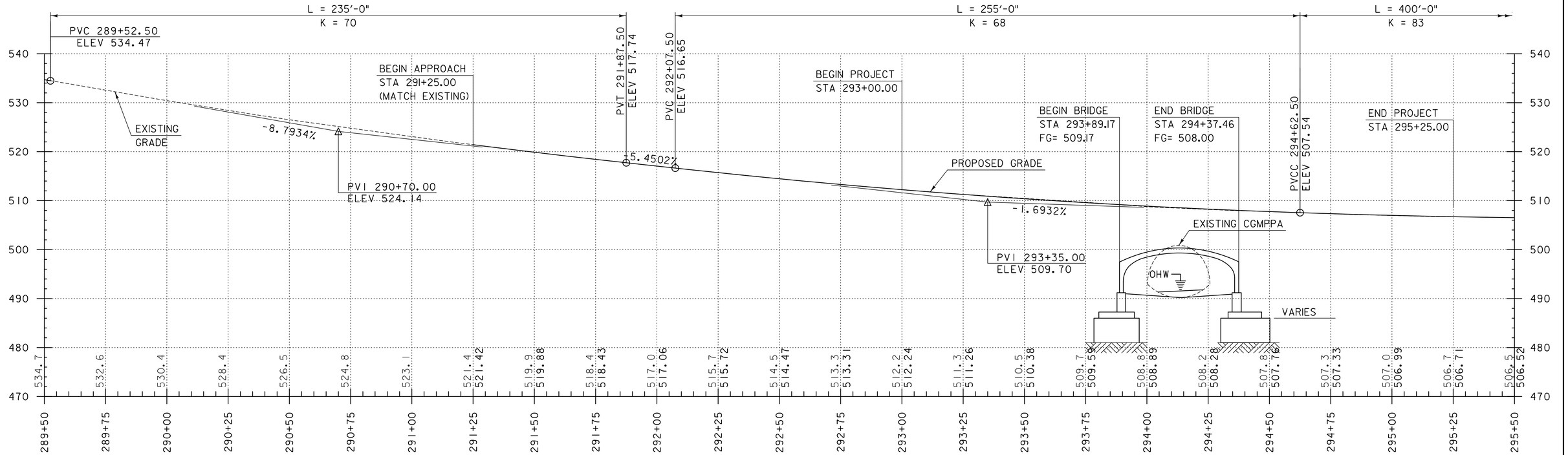
FILE NAME: z16b001bdr.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: J. HOWE
LAYOUT SHEET 2

PLOT DATE: 5/20/2016
DRAWN BY: S. MORGAN
CHECKED BY: J. OLUND
SHEET 12 OF 69



VT 100 BANKING DIAGRAM

HORIZONTAL SCALE: 1"=20'
NO VERTICAL SCALE



NOTE:

GRADES SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG ℄.

GRADES SHOWN TO THE NEAREST HUNDREDTH ARE FINISH GRADE ALONG ℄.

VT 100 PROFILE 1

HORIZONTAL SCALE: 1"=20'
VERTICAL SCALE: 1" = 10'

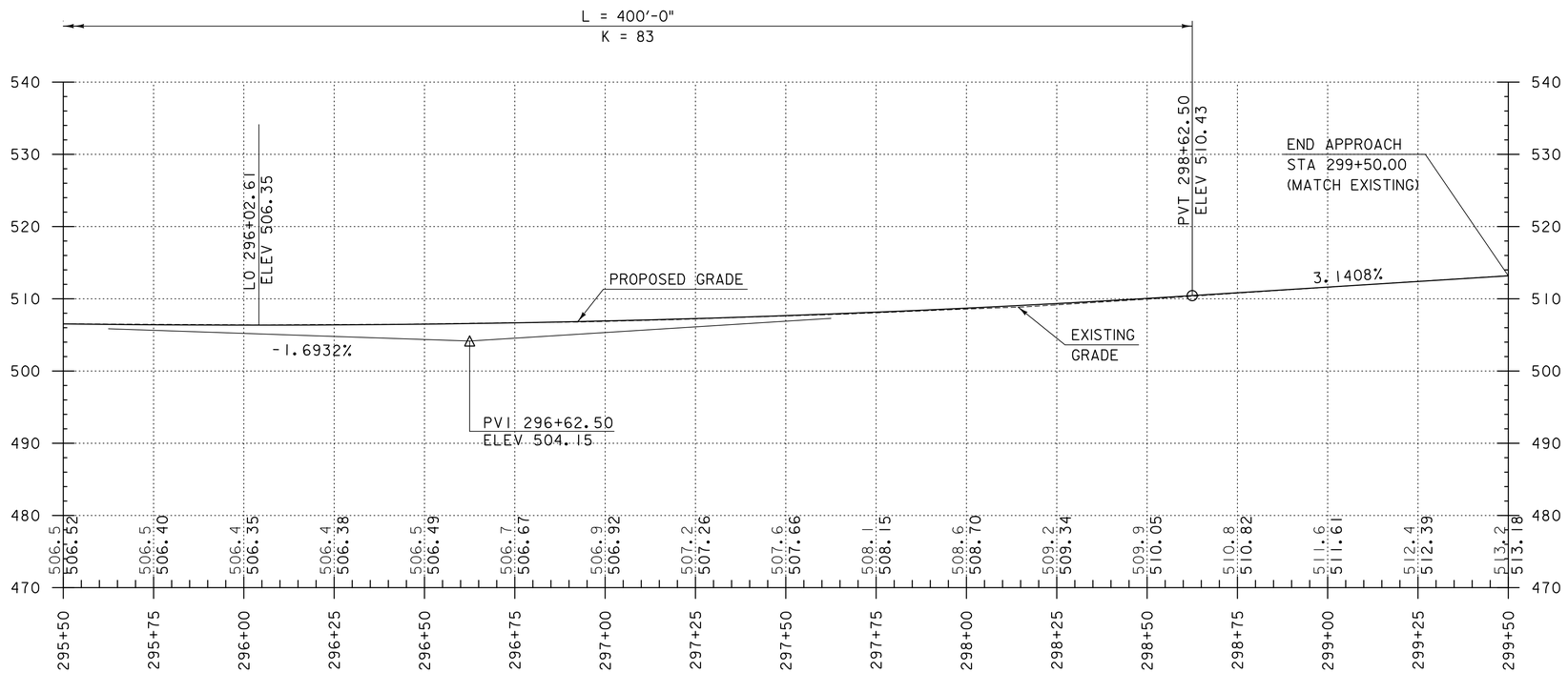
FOR REVIEW ONLY
NOT FOR CONSTRUCTION

TYLIN INTERNATIONAL

PROJECT NAME: DUXBURY
PROJECT NUMBER: BF 013-4(47)

FILE NAME: z16b001pro.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: J. HOWE
PROFILE SHEET 1

PLOT DATE: 5/20/2016
DRAWN BY: S. MORGAN
CHECKED BY: B. TOOTHAKER
SHEET 13 OF 69



NOTE:

GRADES SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG ℄.

GRADES SHOWN TO THE NEAREST HUNDREDTH ARE FINISH GRADE ALONG ℄.

VT 100 PROFILE 2

HORIZONTAL SCALE: 1"=20'
VERTICAL SCALE: 1" = 10'

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

TYLIN INTERNATIONAL

PROJECT NAME: DUXBURY
PROJECT NUMBER: BF 013-4(47)

FILE NAME: z16b001pro.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: J. HOWE
PROFILE SHEET 2

PLOT DATE: 5/20/2016
DRAWN BY: S. MORGAN
CHECKED BY: B. TOOTHAKER

SOIL CLASSIFICATION

AASHTO	
A1	Gravel and Sand
A3	Fine Sand
A2	Silty or Clayey Gravel and Sand
A4	Silty Soil - Low Compressibility
A5	Silty Soil - Highly Compressible
A6	Clayey Soil - Low Compressibility
A7	Clayey Soil - Highly Compressible

ROCK QUALITY DESIGNATION

R.Q.D. (%)	ROCK DESCRIPTION
<25	Very Poor
25 to 50	Poor
51 to 75	Fair
76 to 90	Good
>90	Excellent

SHEAR STRENGTH

UNDRAINED SHEAR STRENGTH IN P.S.F.	CONSISTENCY
<250	Very Soft
250-500	Soft
500-1000	Med. Stiff
1000-2000	Stiff
2000-4000	Very Stiff
>4000	Hard

CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

DENSITY (GRANULAR SOILS)		CONSISTENCY (COHESIVE SOILS)	
N	DESCRIPTIVE TERM	N	DESCRIPTIVE TERM
<5	Very Loose	<2	Very Soft
5-10	Loose	2-4	Soft
11-24	Med. Dense	5-8	Med. Stiff
25-50	Dense	9-15	Stiff
>50	Very Dense	16-30	Very Stiff
		31-60	Hard
		>60	Very Hard

COMMONLY USED SYMBOLS

▼	Water Elevation
⊗	Standard Penetration Boring
⊕	Auger Boring
⊙	Rod Sounding
S	Sample
N	Standard Penetration Test Blow Count Per Foot For: 2" O.D. Sampler 1 3/8" I.D. Sampler Hammer Weight Of 140 Lbs. Hammer Fall Of 30"
VS	Field Vane Shear Test
US	Undisturbed Soil Sample
B	Blast
DC	Diamond Core
MD	Mud Drill
WA	Wash Ahead
HSA	Hollow Stem Auger
AX	Core Size 1 1/8"
BX	Core Size 1 5/8"
NX	Core Size 2 1/8"
M	Double Tube Core Barrel Used
LL	Liquid Limit
PL	Plastic Limit
PI	Plasticity Index
NP	Non Plastic
w	Moisture Content (Dry Wgt. Basis)
D	Dry
M	Moist
MTW	Moist To Wet
W	Wet
Sat	Saturated
Bo	Boulder
Gr	Gravel
Sa	Sand
Si	Silt
Cl	Clay
HP	Hardpan
Le	Ledge
NLTD	No Ledge To Depth
CNPF	Can Not Penetrate Further
TLOB	Top of Ledge Or Boulder
NR	No Recovery
Rec.	Recovery
%Rec.	Percent Recovery
RQD	Rock Quality Designation
CBR	California Bearing Ratio
<	Less Than
>	Greater Than
R	Refusal (N > 100)
VTSPG	NAD83 - See Note 7

COLOR			
blk	Black	pnk	Pink
bl	Blue	pu	Purple
brn	Brown	rd	Red
dk	Dark	tn	Tan
gry	Gray	wh	White
gn	Green	yel	Yellow
lt	Light	mltc	Multicolored
or	Orange		

DEFINITIONS (AASHTO)

BEDROCK (LEDGE) - Rock in its native location of indefinite thickness.

BOULDER - A rock fragment with an average dimension > 12 inches.

COBBLE - Rock fragments with an average dimension between 3 and 12 inches.

GRAVEL - Rounded particles of rock < 3" and > 0.0787" (#10 sieve).

SAND - Particles of rock < 0.0787" (#10 sieve) and > 0.0029" (#200 sieve).

SILT - Soil < 0.0029" (#200 sieve), non or slightly plastic and exhibits no strength when air-dried.

CLAY - Fine grained soil, exhibits plasticity when moist and considerable strength when air-dried.

VARVED - Alternate layers of silt and clay.

HARDPAN - Extremely dense soil, cemented layer, not softened when wet.

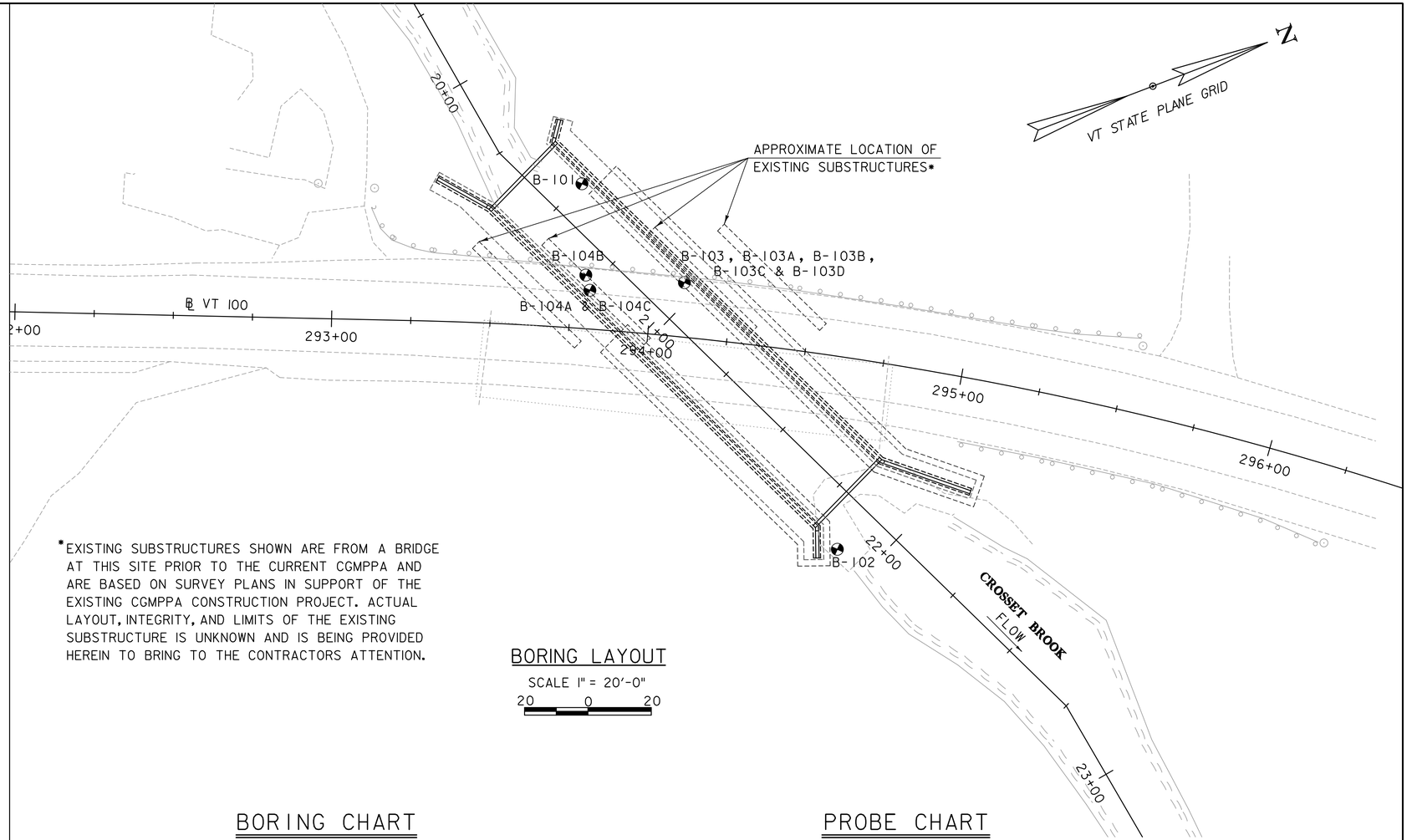
MUCK - Soft organic soil (containing > 10% organic material.

MOISTURE CONTENT - Weight of water divided by dry weight of soil.

FLOWING SAND - Granular soil so saturated (loose) that it flows into drill casing during extraction of wash rod.

STRIKE - Angle from magnetic north to line of intersection of bed with a horizontal plane.

DIP - Inclination of bed with a horizontal plane.



*EXISTING SUBSTRUCTURES SHOWN ARE FROM A BRIDGE AT THIS SITE PRIOR TO THE CURRENT CGMPPA AND ARE BASED ON SURVEY PLANS IN SUPPORT OF THE EXISTING CGMPPA CONSTRUCTION PROJECT. ACTUAL LAYOUT, INTEGRITY, AND LIMITS OF THE EXISTING SUBSTRUCTURE IS UNKNOWN AND IS BEING PROVIDED HEREIN TO BRING TO THE CONTRACTORS ATTENTION.

BORING LAYOUT

SCALE 1" = 20'-0"

20 0 20

BORING CHART

HOLE NO.	SURV. STATION	OFFSET	NORTHING	EASTING	GROUND ELEV.	ELEV. TLOB
B-101	293+76.01	45.58' LT	664052.37	1572920.80	504.4	486.0
B-102	294+69.63	60.30' RT	664065.35	1573061.03	497.4	476.3
B-103	294+09.90	17.19' LT	664065.06	1572963.93	509.9	483.4
B-104b	293+79.15	16.90' LT	664039.17	1572946.47	510.6	488.1

PROBE CHART

HOLE NO.	SURV. STATION	OFFSET	NORTHING	EASTING	GROUND ELEV.
B-103A	294+09.13	13.81' LT	664062.47	1572966.24	509.9
B-103B	294+12.04	14.29' LT	664065.15	1572967.55	509.9
B-103C	294+15.43	15.50' LT	664068.65	1572968.57	509.8
B-103D	294+17.52	16.30' LT	664070.84	1572969.16	509.8
B-104A	293+80.17	12.44' LT	664037.55	1572950.75	510.5
B-104C	293+80.75	12.21' LT	664037.91	1572951.27	510.5

GENERAL NOTES

1. The subsurface explorations shown herein were made between April 17, 2015 and May 5, 2015 by the Agency.
2. Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
3. Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
4. Engineering judgment was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgment by the Contractor.
5. Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
6. Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.
7. Northing and Easting coordinates are shown in Vermont State Plane Grid North American Datum 1983 in meters and survey feet.

PROJECT NAME: DUXBURY
PROJECT NUMBER: BF 013-4(47)

FILE NAME: z16b001bor.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: VTRANS
BORING INFORMATION AND LAYOUT SHEET

PLOT DATE: 5/20/2016
DRAWN BY: P. BRYANT
CHECKED BY: J. OLUND
SHEET 36 OF 69

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND
MATERIALS BUREAU
CENTRAL LABORATORY

BORING LOG

DUXBURY
BF 013-4(47)
VT 100 Br. #193

Boring No.: **B-101**
Page No.: 1 of 1
Pin No.: 16b001
Checked By: MLM

Boring Crew: WHITLOCK, JUDKINS, NIETO
Date Started: 4/18/16 Date Finished: 4/18/16
VTSPG NAD83: N 664052.37 ft E 1572920.80 ft
Station: 20+50.3 Offset: -11.30
Ground Elevation: 504.4 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 55 TRACK	C. = 1.41

Groundwater Observations

Date	Depth (ft)	Notes
04/18/16	12.9	W.T. after drilling

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		A-1-b, SiSaGr, brn, Moist, Rec. = 0.8 ft, Lab Note: Broken rock and plant material was within sample. Field Note:, NXDC, cleaned out casing				1-5-12-28 (17)	14.1	41.4	38.5	20.1
		A-2-4, GrSa, brn-Lt/brn, Moist, Rec. = 1.1 ft, Lab Note: Broken rock was within sample.				6-4-3-4 (7)	13.2	29.1	56.5	14.4
5		A-2-4, Sa, Lt/brn, Moist, Rec. = 1.0 ft Field Note:, NXDC, cleaned out casing				4-4-3-2 (7)	10.6	4.3	83.6	12.1
		A-2-4, Sa, Lt/brn, Moist, Rec. = 0.5 ft				3-3-3-2 (6)	18.5	10.1	79.3	10.6
		A-1-b, SaGr, Lt/brn, Moist, Rec. = 0.6 ft				4-3-4-5 (7)	13.4	48.8	33.1	18.1
10		A-1-b, GrSa, brn, Moist, Rec. = 0.9 ft Field Note:, NXDC, cleaned out casing				9-5-17-9 (22)	12.4	36.3	50.6	13.1
		A-1-a, SaGr, gry-brn, Moist, Rec. = 1.0 ft, Lab Note: Broken rock was within sample. Field Note:, NXDC, cleaned out casing				6-43-20-9 (63)	10.5	60.2	27.9	11.9
15		A-1-a, SaGr, gry-brn, Moist, Rec. = 1.1 ft, Lab Note: A lot of broken and weathered rock was within sample. Field Note:, NXDC, cleaned out casing				12-12-18-39 (30)	12.4	61.6	28.4	10.0
		A-1-b, SaGr, gry-Dk/gry, Moist, Rec. = 0.7 ft, Lab Note: A lot of broken and weathered rock was within sample. Field Note:, NXDC, cleaned out casing				25-R@3.5" (R)	12.2	44.3	38.0	17.7
BOTTOM OF ABUT NO 2 FOOTING EL 486.00		A-1-b, SiSaGr, Dk/gry, Moist, Rec. = 0.4 ft, Lab Note: Sample consisted entirely of weathered rock.	1 (75-80)	100 (44)	5 5 7 7 9	R@5.0" (R)	11.0	48.7	30.4	20.9
20		18.4 ft - 23.4 ft, Dark gray to black, Pyrite bearing graphitic PHYLLITE, with siliceous laminae. Slight rust staining on joints. Hard, Very slightly weathered, Fair rock, NX, RMR=41								
		23.4 ft - 28.4 ft, Dark gray to black, Slightly vuggy pyrite bearing graphitic PHYLLITE, with siliceous laminae. Very faint rust staining and some calcification on joints. Moderately hard, Very slightly weathered, Fair rock, NX, RMR=46	2 (75-80)	100 (53)	6 7 7 8 10					
25										
30		Hole stopped @ 28.4 ft								

Remarks:
Top of Bedrock at 18.4 feet.
Hole collapsed at 12.6 feet.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C. is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 DUXBURY BF 013-4(47).GPJ VERMONT AOT.GDT 4/26/16

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND
MATERIALS BUREAU
CENTRAL LABORATORY

BORING LOG

DUXBURY
BF 013-4(47)
VT 100 Br. #193

Boring No.: **B-102**
Page No.: 1 of 1
Pin No.: 16b001
Checked By: MLM

Boring Crew: WHITLOCK, JUDKINS, GARROW
Date Started: 4/13/16 Date Finished: 4/14/16
VTSPG NAD83: N 664065.35 ft E 157061.03 ft
Station: 21+88.5 Offset: 15.00
Ground Elevation: 497.4 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 55 TRACK	C. = 1.41

Groundwater Observations

Date	Depth (ft)	Notes
04/14/16	6.4	W.T. before drilling

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		A-2-4, GrSiSa, brn, Moist, Rec. = 0.5 ft, Lab Note: Broken rock and plant material was within sample.				1-1-2-4 (3)	19.1	25.5	43.6	30.9
		Field Note:, No Recovery, Stone in end of sampler.				1-2-3-3 (5)				
5		A-3, GrSa, brn, MTW, Rec. = 1.0 ft				2-3-2-WH (5)	16.3	24.2	67.6	8.2
		A-2-4, Sa, brn, Wet, Rec. = 1.0 ft Field Note:, Cleaned out casing				2-2-4-8 (6)	20.7	17.6	69.7	12.7
		A-1-b, SaSiGr, gry, MTW, Rec. = 0.7 ft, Lab Note: Broken rock, pieces of wood, and wood fibers were within sample. A small amount of clay was within sample. Sample tested non-plastic. Field Note:, Cleaned out casing				3-5-10-20 (15)	12.8	53.2	22.2	24.6
10		A-1-b, SaGr, gry-brn, Moist, Rec. = 0.8 ft Field Note:, Cleaned out casing				18-18-15-8 (33)	12.1	47.8	35.4	16.8
BOTTOM OF ABUT NO 1 FOOTING EL 486.00		A-4, SaSi, brn, Moist, Rec. = 0.8 ft				3-4-4-5 (8)	25.5	2.8	44.9	52.3
15		A-4, Si, gry, Moist, Rec. = 0.6 ft				8-8-6-6 (14)	30.0	0.8	10.4	88.8
		A-2-4, SiSa, brn, Moist, Rec. = 0.7 ft					24.3	13.2	55.3	31.5
		A-4, SaSi, gry, MTW, Rec. = 1.2 ft				7-6-9-9 (15)	26.0	9.8	30.2	60.0
		A-2-4, SiSaGr, gry, Moist, Rec. = 1.1 ft, Lab Note: A lot of broken and weathered rock was within sample.				8-8-12-22 (20)	14.7	41.6	29.9	28.5
20		A-1-b, SiSaGr, gry, Moist, Rec. = 1.0 ft, Lab Note: A lot of broken and weathered rock was within sample.				30-28-R@1.0" (R)	12.4	47.1	31.5	21.4
		21.1 ft - 26.1 ft, Dark gray, Vuggy pyrite bearing graphitic PHYLLITE, with siliceous laminae. Extensive rust staining on joints. Medium to soft, Moderately weathered, Poor rock, NX, RMR=30	1 (80)	60 (0)	4 3 2 3 2					
25		26.1 ft - 27.2 ft, Dark brown, PHYLLITE, and silty gravel. Very soft, Very severely weathered, Poor rock, NX, RMR=36 27.2 ft - 30.1 ft, Dark gray, Pyrite bearing graphitic PHYLLITE, with siliceous laminae. Minor rust staining on joints. Hard, Very slightly weathered, Poor rock, RMR=36	2 (78)	56 (20)	2 6 5 9					
30		30.1 ft - 35.1 ft, Dark gray to black, Pyrite bearing graphitic PHYLLITE, with siliceous laminae. Clean joints. Hard, Unweathered, Good rock, NX, RMR=61	3 (78)	90 (100)	4 7 5 6 5					
35		Hole stopped @ 35.1 ft								

Remarks:
Top of Bedrock 21.1 feet.
Hole collapsed at 8.9 feet.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C. is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 DUXBURY BF 013-4(47).GPJ VERMONT AOT.GDT 4/26/16

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

T.Y. LIN INTERNATIONAL

PROJECT NAME: DUXBURY
PROJECT NUMBER: BF 013-4(47)

FILE NAME: z16b001blog1.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: VTRANS
BORING LOGS 1

PLOT DATE: 5/20/2016
DRAWN BY: S. MORGAN
CHECKED BY: J. OLUND
SHEET 37 OF 69

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND
MATERIALS BUREAU
CENTRAL LABORATORY

BORING LOG

DUXBURY
BF 013-4(47)
VT 100 Br. #193

Boring No.: **B-103**
Page No.: 1 of 1
Pin No.: 16b001
Checked By: MLM

Boring Crew: WHITLOCK, JUDKINS, NIETO
Date Started: 4/19/16 Date Finished: 4/19/16
VTSPG NAD83: N 664065.06 ft E 1572963.93 ft
Station: 20+95.4 Offset: -11.50
Ground Elevation: 509.9 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:		Auto/AWJ
Rig:	CME 55 TRACK	C. = 1.41

Groundwater Observations

Date	Depth (ft)	Notes
04/19/16	12.5	W.T. after drilling

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (ROD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Asphalt Pavement, 0.0 ft - 0.63 ft								
		A-1-b, GrSa, Lt/brn, Moist, Rec. = 1.1 ft				10-11-11-10 (22)	5.2	36.0	53.1	10.9
5		Field Note:, Cleaned out casing A-2-4, GrSiSa, Lt/brn, Moist, Rec. = 1.2 ft				4-4-6-6 (10)	14.1	20.0	53.5	26.5
10		Field Note:, Cleaned out casing A-2-4, Sa, Lt/brn, Moist, Rec. = 1.1 ft				7-6-6-7 (12)	9.6	15.7	70.2	14.1
15		Field Note:, Cleaned out casing A-3, Sa, Lt/brn, Moist, Rec. = 0.9 ft				2-2-3-5 (5)	12.4	18.6	71.8	9.6
20		Field Note:, Cleaned out casing A-1-a, SaGr, Lt/brn, Moist, Rec. = 2.0 ft, Lab Note: Broken rock was within sample.				15-18-16-14 (34)	8.8	67.6	27.1	5.3
		Field Note:, Cleaned out casing A-1-b, SaGr, gry, Moist, Rec. = 0.7 ft, Lab Note: Broken and weathered rock was within sample.				16-49-R@5.0" (R)	12.3	50.0	30.8	19.2
BOTTOM OF ABUT NO 2 FOOTING EL 486.00		Field Note:, NXDC, Cleaned out casing A-1-b, SiGrSa, gry, Moist, Rec. = 0.4 ft, Lab Note: A lot of broken and weathered rock was within sample.				R@5.0" (R)	10.4	32.8	46.0	21.2
25		A-1-a, SaGr, gry, Moist, Rec. = 0.2 ft, Lab Note: Sample consisted entirely of broken and weathered rock.				R@2.5" (R)	8.5	57.4	30.5	12.1
		26.5 ft - 31.5 ft, Dark gray to black, Graphitic PHYLLITE, with siliceos laminae. Rust staining along joints. Medium hard, Slightly weathered, Poor rock, NX, RMR=27	1 (75-80)	62 (0)	3 4 6 5 5					
30		31.5 ft - 36.5 ft, Dark gray to black, Slightly vuggy pyrite bearing graphitic PHYLLITE, with siliceous laminae. Vertical rust stained joint at 31.5 feet to 32.15 feet. Remaining joints are fresh. Hard, Unweathered, Fair rock, NX, RMR=53	2 (75-80)	92 (78)	4 4 5 7 6					
35		Hole stopped @ 36.5 ft								
40		Remarks: Top of Bedrock at 26.5 feet. Hole Collapsed at 16.6 feet. 1.) All water return stopped from 8.0-19.0 feet.								

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 DUXBURY BF 013-4(47).GPJ VERMONT AOT.GDT 4/28/16

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND
MATERIALS BUREAU
CENTRAL LABORATORY

BORING LOG

DUXBURY
BF 013-4(47)
VT 100 Br. #193

Boring No.: **B-103A**
Page No.: 1 of 1
Pin No.: 16b001
Checked By: MLM

Boring Crew: JUDKINS, NIETO
Date Started: 4/22/16 Date Finished: 4/22/16
VTSPG NAD83: N 664062.47 ft E 1572966.24 ft
Station: 20+96.9 Offset: -8.40
Ground Elevation: 509.9 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:		Auto/AWJ
Rig:	CME 55 TRACK	C. = 1.41

Groundwater Observations

Date	Depth (ft)	Notes

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Asphalt Pavement, 0.0 ft - 0.62 ft					
2.5							
5.0							
7.5							
10.0							
12.5		Field Note:, NXDC					
		Hole stopped @ 13.5 ft					
15.0		Remarks: Hole collapsed at 10.5 feet 1.) Advanced casing to 12.5 feet. 2.) Soil and rock fragments found in cuttings. Concrete was not encountered. 3.) Hit culvert at 13.5 feet and aborted drilling operations.					
17.5							

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 DUXBURY BF 013-4(47).GPJ VERMONT AOT.GDT 4/28/16

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND
MATERIALS BUREAU
CENTRAL LABORATORY

BORING LOG

DUXBURY
BF 013-4(47)
VT 100 Br. #193

Boring No.: **B-103B**
Page No.: 1 of 1
Pin No.: 16b001
Checked By: MLM

Boring Crew: JUDKINS, NIETO
Date Started: 4/22/16 Date Finished: 4/22/16
VTSPG NAD83: N 664065.15 ft E 1572967.55 ft
Station: 20+98.9 Offset: -10.60
Ground Elevation: 509.9 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:		Auto/AWJ
Rig:	CME 55 TRACK	C. = 1.41

Groundwater Observations

Date	Depth (ft)	Notes
04/22/16	7.7	W.T. after drilling

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Asphalt Pavement, 0.0 ft - 0.63 ft					
5							
10							
15							
20		Field Note:, NXDC, Weathered rock					
		Hole stopped @ 22.0 ft					
25		Remarks: Hole Collapsed at 10.5 feet. 1.) Advanced boulder breaker to 15.0 feet. 2.) Advanced casing to 20.0 feet. 3.) Concrete was not encountered.					

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 DUXBURY BF 013-4(47).GPJ VERMONT AOT.GDT 4/28/16

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

TYLIN INTERNATIONAL

PROJECT NAME: DUXBURY
PROJECT NUMBER: BF 013-4(47)

FILE NAME: z16b001blog2.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: VTRANS
BORING LOGS 2

PLOT DATE: 5/20/2016
DRAWN BY: S. MORGAN
CHECKED BY: J. OLUND
SHEET 38 OF 69

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND
MATERIALS BUREAU
CENTRAL LABORATORY

BORING LOG

DUXBURY
BF 013-4(47)
VT 100 Br. #193

Boring No.: **B-103C**
Page No.: 1 of 1
Pin No.: 16b001
Checked By: MLM

Boring Crew: JUDKINS, NIETO
Date Started: 4/22/16 Date Finished: 4/22/16
VTSPG NAD83: N 664068.65 ft E 1572968.57 ft
Station: 21+0.8 Offset: -13.70
Ground Elevation: 509.8 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:		Auto/AWJ
Rig:	CME 55 TRACK	C_e = 1.41

Groundwater Observations

Date	Depth (ft)	Notes

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
0		Asphalt pavement, 0.0 ft - 0.61 ft					
10.0		Field Note:, NXDC, Broken rock and pieces of concrete found in sample. Largest piece of concrete recovered was 0.4 feet.					
12.5		Field Note:, NXDC through concrete, Pieces of broken rock and concrete.					
16.0		Hole stopped @ 16.0 ft					

Remarks:
Hole collapsed at 11.7 feet.

1.) Advanced casing to 9.5 feet.
2.) Concrete was not encountered from 14.5 to 16.0 feet.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_e is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 DUXBURY BF 013-4(47).GPJ VERMONT AOT.GDT 4/28/16

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND
MATERIALS BUREAU
CENTRAL LABORATORY

BORING LOG

DUXBURY
BF 013-4(47)
VT 100 Br. #193

Boring No.: **B-103D**
Page No.: 1 of 1
Pin No.: 16b001
Checked By: MLM

Boring Crew: JUDKINS, NIETO
Date Started: 4/22/16 Date Finished: 4/22/16
VTSPG NAD83: N 664070.84 ft E 1572969.16 ft
Station: 21+2.0 Offset: -15.60
Ground Elevation: 509.8 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:		Auto/AWJ
Rig:	CME 55 TRACK	C_e = 1.41

Groundwater Observations

Date	Depth (ft)	Notes

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
0		Asphalt pavement, 0.0 ft - 0.72 ft					
12.0		Hole stopped @ 12.0 ft					

Remarks:
1.) Advanced boulder breaker to 12.0 feet.
2.) Boring drilled to check for concrete. No concrete found, so hole was stopped at 12.0 feet.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_e is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 DUXBURY BF 013-4(47).GPJ VERMONT AOT.GDT 4/28/16

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

T.Y. LIN INTERNATIONAL

PROJECT NAME: DUXBURY
PROJECT NUMBER: BF 013-4(47)

FILE NAME: z16b001blog3.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: VTRANS
BORING LOGS 3

PLOT DATE: 5/20/2016
DRAWN BY: S. MORGAN
CHECKED BY: J. OLUND
SHEET 39 OF 69

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND
MATERIALS BUREAU
CENTRAL LABORATORY

BORING LOG

DUXBURY
BF 013-4(47)
VT 100 Br. #193

Boring No.: **B-104A**
Page No.: 1 of 1
Pin No.: 16b001
Checked By: MLM

Boring Crew: JUDKINS, NIETO
Date Started: 4/20/16 Date Finished: 4/20/16
VTSPG NAD83: N 664037.55 ft E 1572950.75 ft
Station: 20+75.0 Offset: 11.30
Ground Elevation: 510.5 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 55 TRACK	C. = 1.41

Groundwater Observations

Date	Depth (ft)	Notes

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Asphalt pavement, 0.0 ft - 0.93 ft						
8.9 ft - 13.0 ft, Gray, CONCRETE, 4.1 feet recovered. NX			1					
		Hole stopped @ 13.0 ft						

Remarks:
1.) Advanced casing to 9.0 feet.
2.) Cored concrete and broke through at 13.0 feet.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 DUXBURY BF 013-4(47).GPJ VERMONT AOT.GDT 4/28/16

BOTTOM OF ABUT NO 2
FOOTING EL 486.00

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND
MATERIALS BUREAU
CENTRAL LABORATORY

BORING LOG

DUXBURY
BF 013-4(47)
VT 100 Br. #193

Boring No.: **B-104B**
Page No.: 1 of 1
Pin No.: 16b001
Checked By: MLM

Boring Crew: JUDKINS, NIETO
Date Started: 4/20/16 Date Finished: 4/21/16
VTSPG NAD83: N 664039.17 ft E 1572946.47 ft
Station: 20+71.4 Offset: 8.50
Ground Elevation: 510.6 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 55 TRACK	C. = 1.41

Groundwater Observations

Date	Depth (ft)	Notes

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Asphalt pavement, 0.0 ft - 0.95 ft								
		A-1-b, SiSaGr, gry, Moist, Rec. = 1.2 ft, Lab Note: A lot of broken and weathered rock was within sample.				2-3-39-R@3.5" (42)	17.0	44.2	32.1	23.7
		Field Note:, NXDC, Cleaned out casing				R@5.0" (R)	13.9	38.2	40.8	21.0
		A-1-b, SiGrSa, gry, Moist, Rec. = 0.4 ft, Lab Note: A lot of broken and weathered rock was within sample. 22.5 ft - 27.5 ft, Dark gray to black, Vuggy pyrite bearing graphitic PHYLLITE, with siliceous laminae. Rust staining and minor calcification along joints. Calcification noted in vugs. Seam/void noted at 23.7 feet to 24.05 feet. Hard, Slightly weathered, Poor rock, NX, RMR=27	1 (78-80)	94 (0)	3 3 3 4 5					
		27.5 ft - 32.5 ft, Dark gray to black, Vuggy pyrite bearing graphitic PHYLLITE, with siliceous laminae. Rust and brown staining along joints. Calcification noted in vugs. Hard, Slightly weathered, Poor rock, NX, RMR=36	2 (75-80)	94 (12)	4 6 6 6 7					
		Hole stopped @ 32.5 ft								

Remarks:
Top of Bedrock at 22.5 feet.
Hole collapsed at 18.9 feet.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 DUXBURY BF 013-4(47).GPJ VERMONT AOT.GDT 4/28/16

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND
MATERIALS BUREAU
CENTRAL LABORATORY

BORING LOG

DUXBURY
BF 013-4(47)
VT 100 Br. #193

Boring No.: **B-104C**
Page No.: 1 of 1
Pin No.: 16b001
Checked By: MLM

Boring Crew: JUDKINS, NIETO
Date Started: 4/21/16 Date Finished: 4/21/16
VTSPG NAD83: N 664037.91 ft E 1572951.27 ft
Station: 20+75.7 Offset: 11.10
Ground Elevation: 510.5 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 55 TRACK	C. = 1.41

Groundwater Observations

Date	Depth (ft)	Notes

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Asphalt pavement, 0.0 ft - 0.95 ft					
		Field Note:, NXDC, cobbles and stones with pieces of concrete					
		Field Note:, NXDC, cobbles and stones with pieces of concrete					
		Hole stopped @ 13.5 ft					

Remarks:
Hole collapsed at 8.6 feet.

1.) Advanced casing to 11.0 feet.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 DUXBURY BF 013-4(47).GPJ VERMONT AOT.GDT 4/28/16

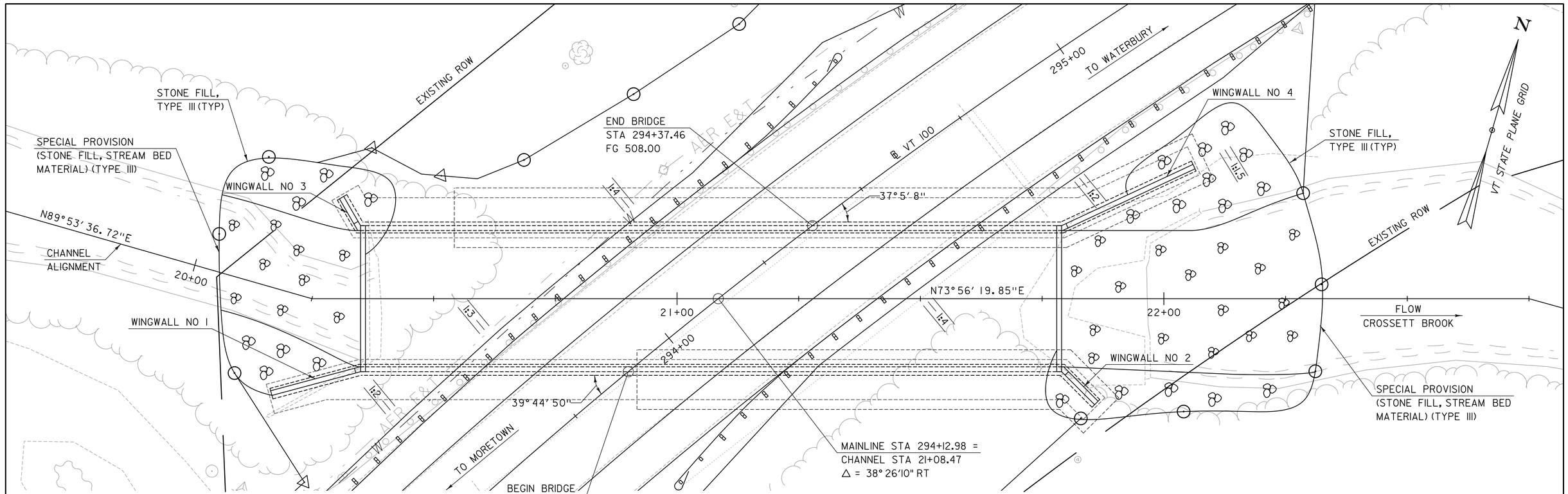
FOR REVIEW ONLY
NOT FOR CONSTRUCTION

T-Y LIN INTERNATIONAL

PROJECT NAME: DUXBURY
PROJECT NUMBER: BF 013-4(47)

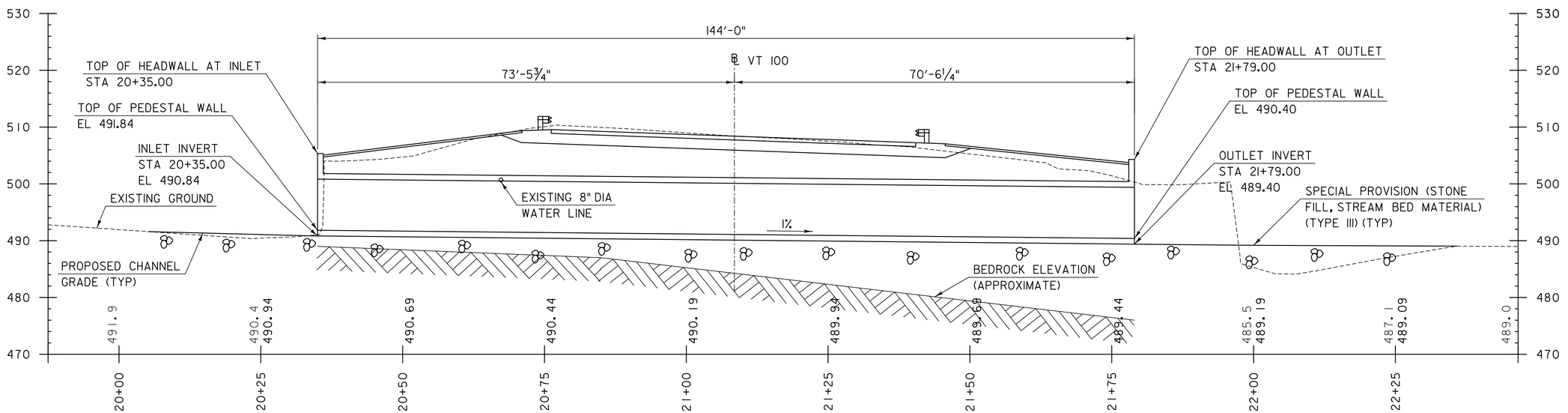
FILE NAME: z16b001blog4.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: VTRANS
BORING LOGS 4

PLOT DATE: 5/20/2016
DRAWN BY: S. MORGAN
CHECKED BY: J. OLUND
SHEET 40 OF 69



PLAN

SCALE: 1" = 10'-0"



NOTE:

GRADES SHOWN TO THE NEAREST TENTH ARE EXISTING CHANNEL GRADE ALONG ℄.

GRADES SHOWN TO THE NEAREST HUNDREDTH ARE FINISH CHANNEL GRADE ALONG ℄.

LONGITUDINAL SECTION ALONG CHANNEL LINE

SCALE: 1" = 10'-0"

SCALE 1" = 10'-0"
10 0 10

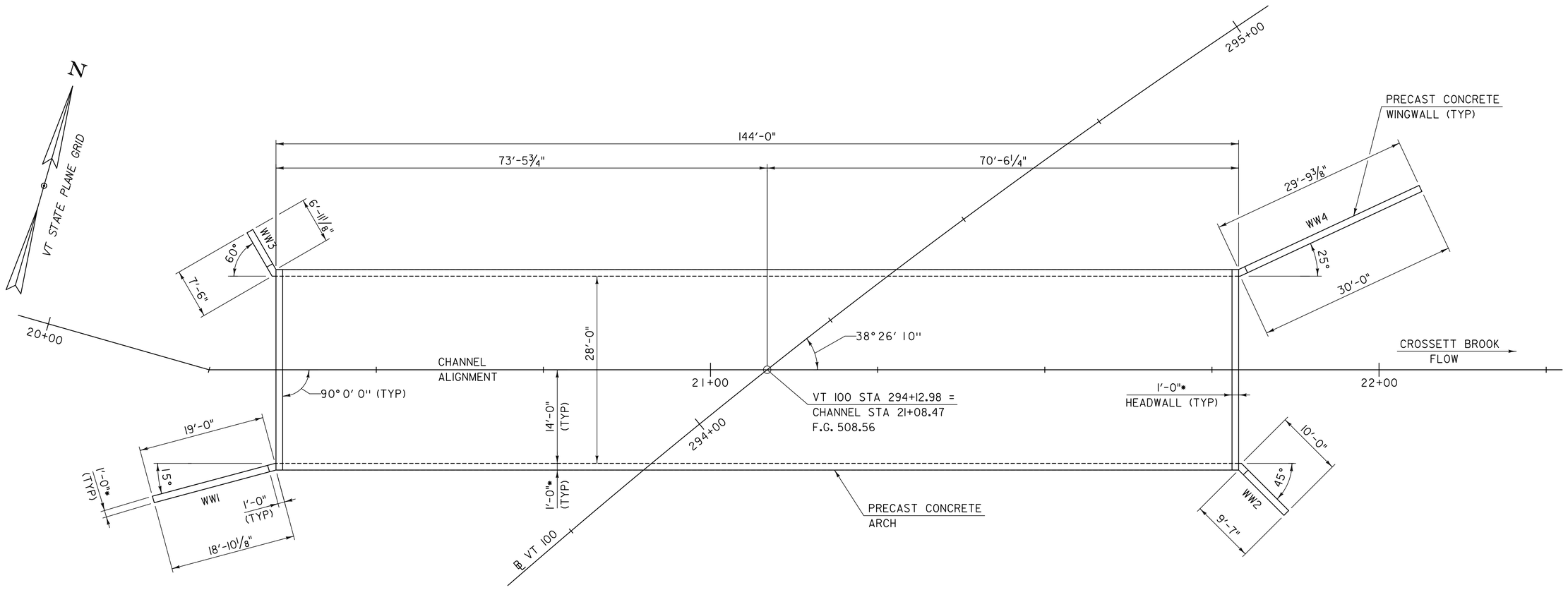
FOR REVIEW ONLY
NOT FOR CONSTRUCTION

T.Y. LIN INTERNATIONAL

PROJECT NAME: DUXBURY
PROJECT NUMBER: BF 013-4(47)

FILE NAME: z16b001pe.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: D. MYERS
PLAN AND ELEVATION

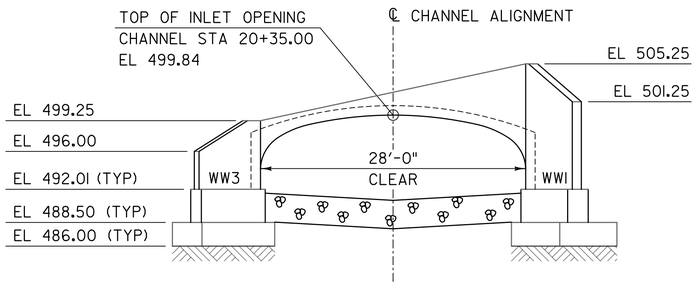
PLOT DATE: 5/20/2016
DRAWN BY: S. MORGAN
CHECKED BY: J. OLUND
SHEET 41 OF 69



* - FOR ESTIMATING PURPOSES ONLY. ACTUAL
DIMENSIONS SHALL BE DETERMINED BY THE FABRICATOR

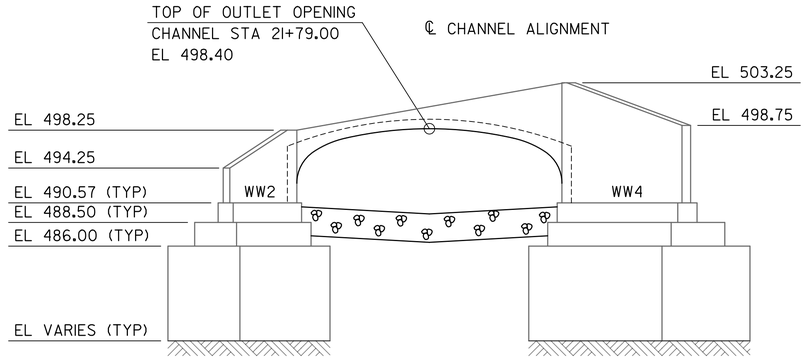
PRECAST CONCRETE STRUCTURE PLAN

SCALE ⅛" = 1'-0"



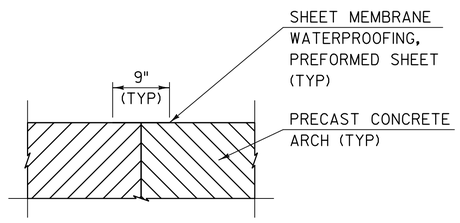
UPSTREAM ELEVATION LOOKING DOWNSTREAM

SCALE ⅛" = 1'-0"



DOWNSTREAM ELEVATION LOOKING UPSTREAM

SCALE ⅛" = 1'-0"



PRECAST ARCH JOINT COVER

SCALE 1" = 1'-0"

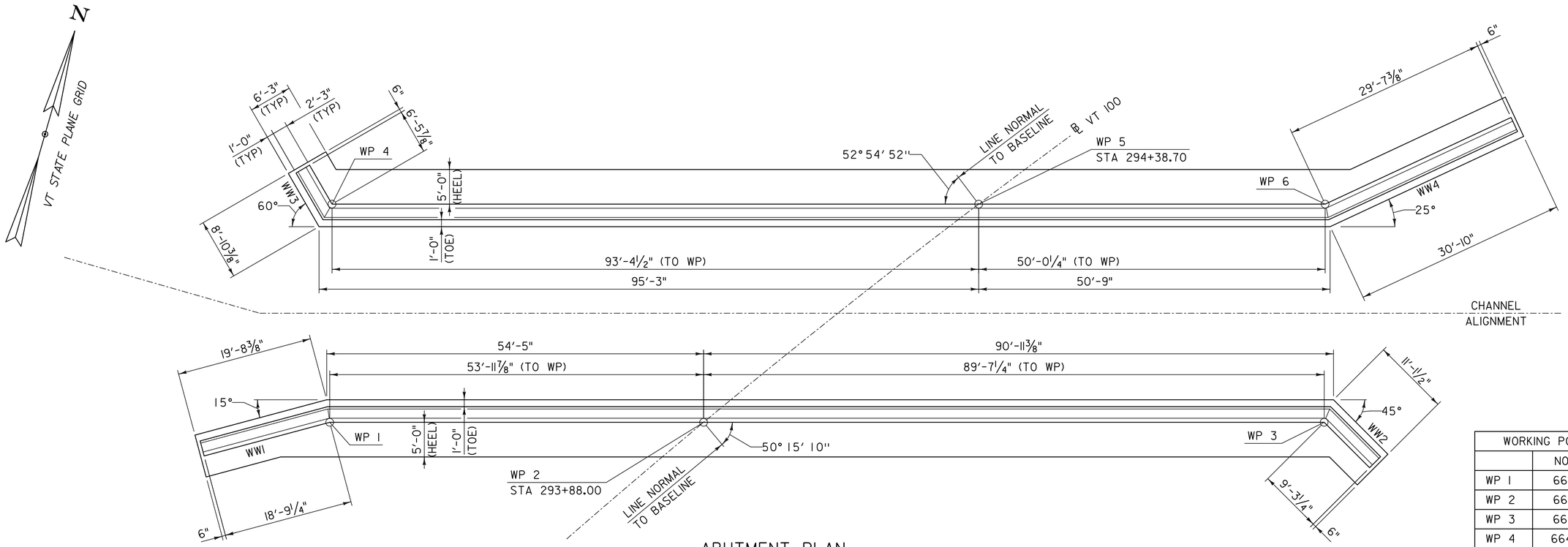
FOR REVIEW ONLY
NOT FOR CONSTRUCTION

PROJECT NAME: DUXBURY
PROJECT NUMBER: BF 013-4(47)

TYLIN INTERNATIONAL

FILE NAME: z16b001struct.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: D. MYERS
PRECAST CONCRETE STRUCTURE PLAN

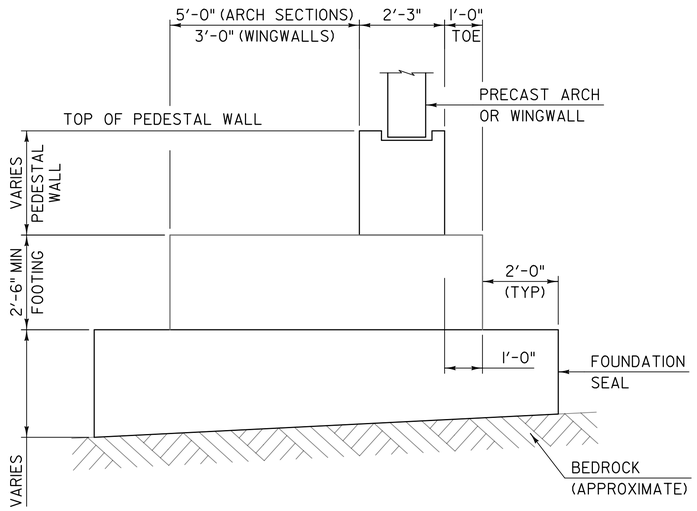
PLOT DATE: 5/20/2016
DRAWN BY: D. MYERS
CHECKED BY: B. TOOTHAKER
SHEET 42 OF 69



ABUTMENT PLAN

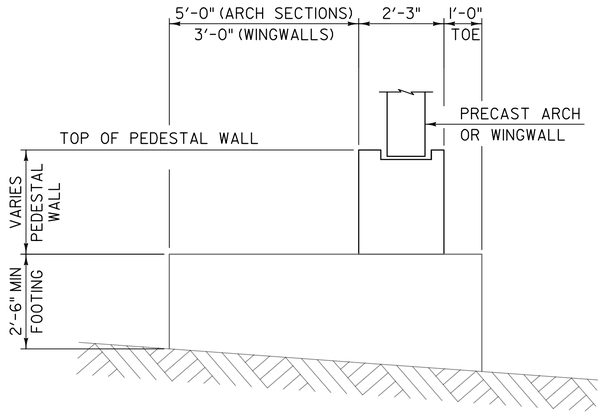
(FOUNDATION SEAL NOT SHOWN)
SCALE 1/8" = 1'-0"

WORKING POINT COORDINATES		
	NORTHING	EASTING
WP 1	664022.19	1572913.59
WP 2	664037.13	1572965.47
WP 3	664061.92	1573051.57
WP 4	664052.55	1572905.19
WP 5	664078.39	1572994.92
WP 6	664092.23	1573043.00



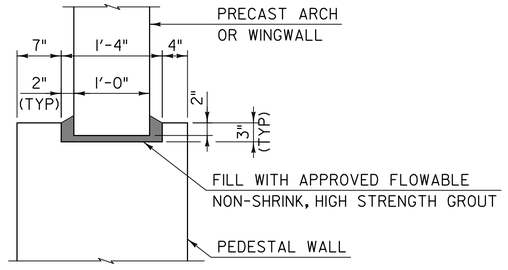
SECTION WITH FOUNDATION SEAL

SCALE: 1/2" = 1'-0"



SECTION WITHOUT FOUNDATION SEAL

SCALE: 1/2" = 1'-0"



PEDESTAL WALL TOP DETAIL

SCALE 1" = 1'-0"

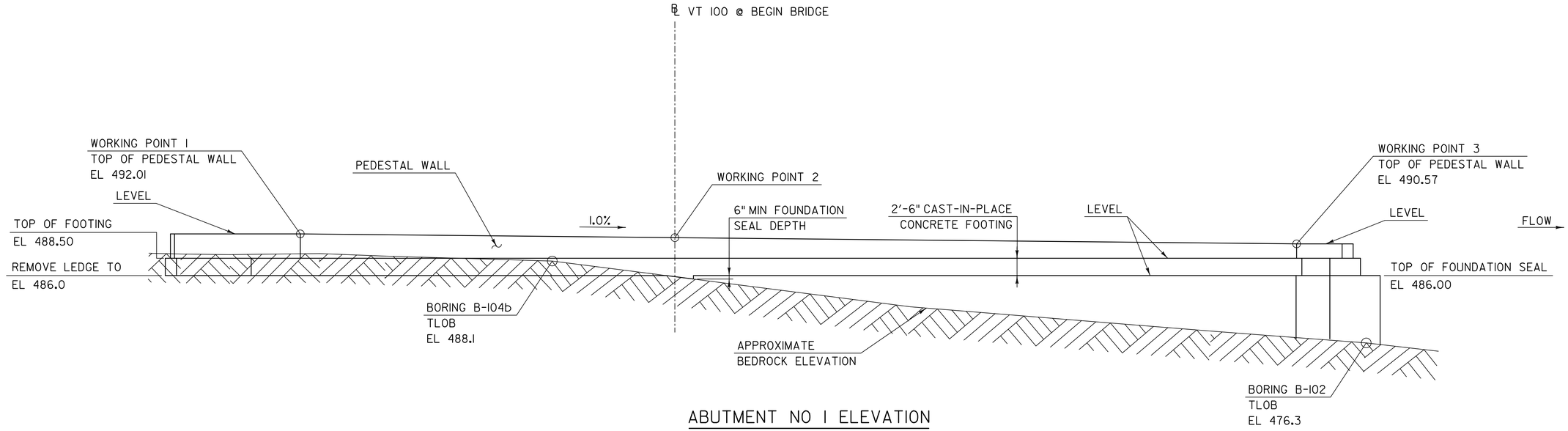
FOR REVIEW ONLY
NOT FOR CONSTRUCTION

T.Y. LIN INTERNATIONAL

PROJECT NAME: DUXBURY
PROJECT NUMBER: BF 013-4(47)

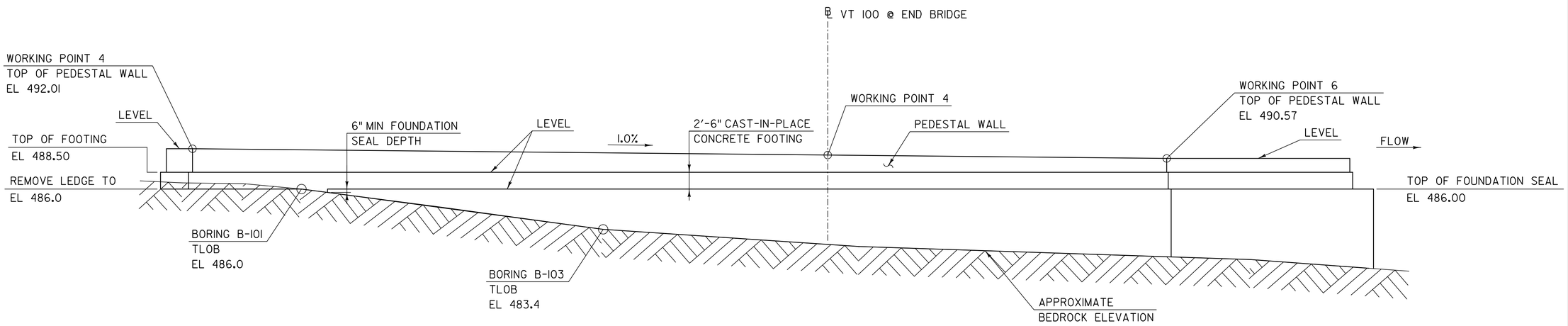
FILE NAME: z16b001found.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: D. MYERS
FOUNDATION PLAN AND SECTIONS

PLOT DATE: 5/20/2016
DRAWN BY: S. MORGAN
CHECKED BY: J. OLUND
SHEET 43 OF 69



ABUTMENT NO 1 ELEVATION

(LOOKING UPSTATION)
SCALE 1/8" = 1'-0"



ABUTMENT NO 2 ELEVATION

(LOOKING UPSTATION)
SCALE 1/8" = 1'-0"

NOTE:
FOUNDATION SEAL MAY BE OMMITTED WHERE
LEDGE ELEVATION EXCEEDS 485.5.

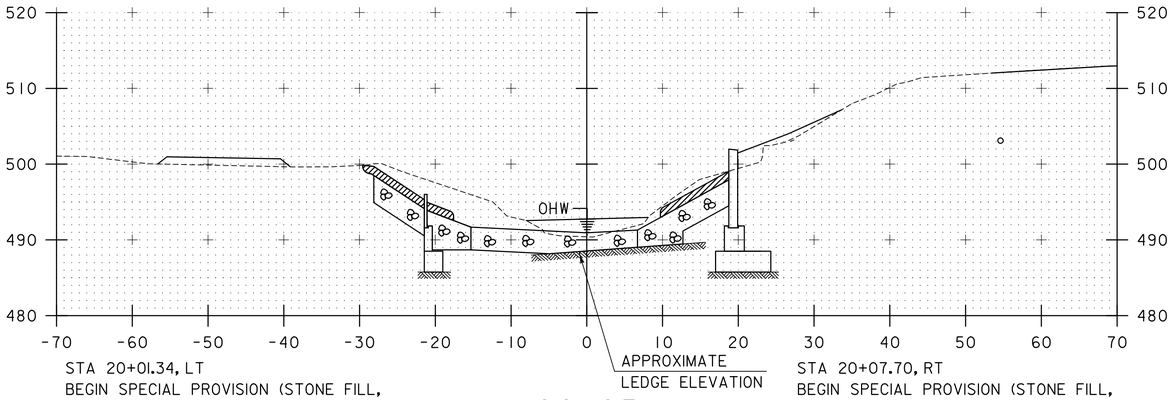
FOR REVIEW ONLY
NOT FOR CONSTRUCTION

PROJECT NAME: DUXBURY
PROJECT NUMBER: BF 013-4(47)

TYLIN INTERNATIONAL

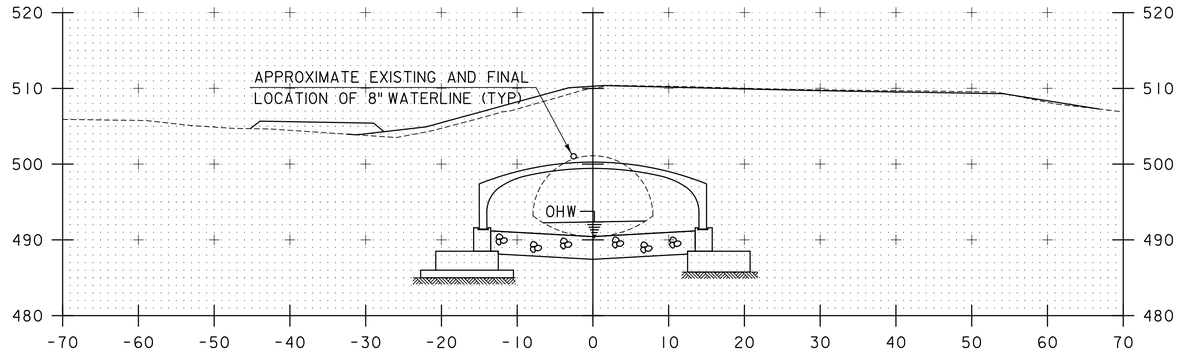
FILE NAME: z16b001fndelev.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: D. MYERS
FOUNDATION ELEVATIONS

PLOT DATE: 5/20/2016
DRAWN BY: S. MORGAN
CHECKED BY: B. TOOTHAKER
SHEET 44 OF 69



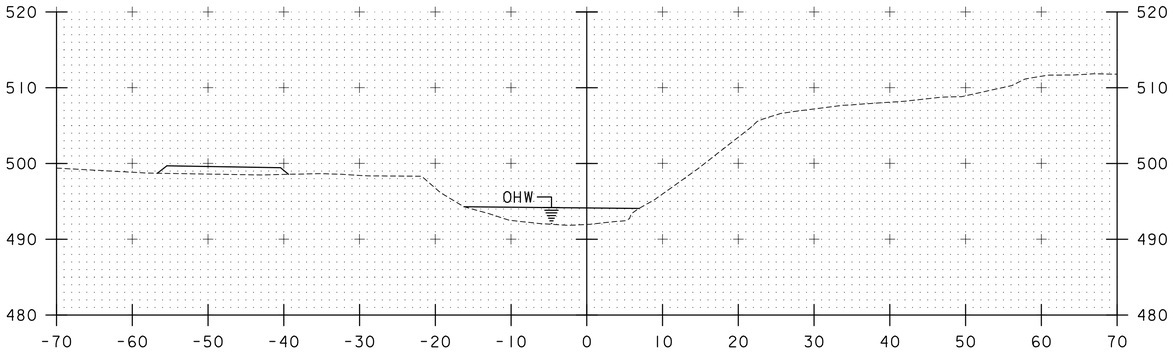
STA 20+01.34, LT
BEGIN SPECIAL PROVISION (STONE FILL, STREAM BED MATERIAL) (TYPE III)
BEGIN UNCLASSIFIED CHANNEL EXCAVATION
BEGIN GEOTEXTILE UNDER STONE FILL
BEGIN STONE FILL TYPE III
BEGIN GRUBBING MATERIAL

20+25

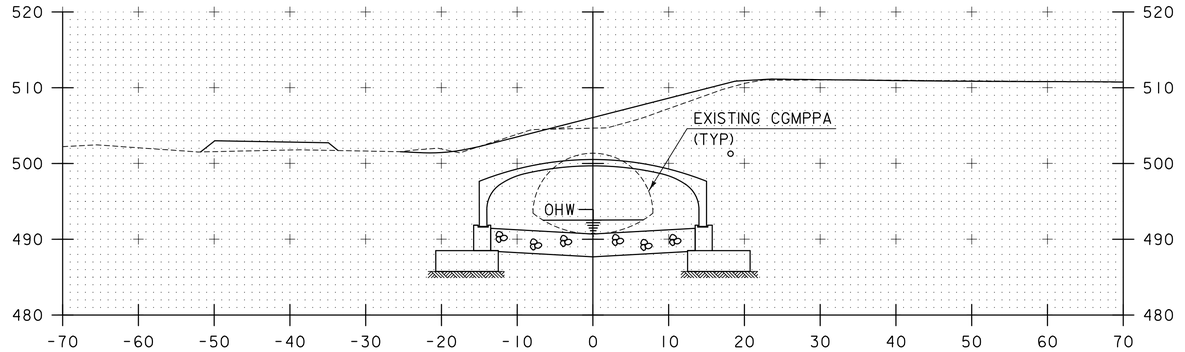


STA 20+07.70, RT
BEGIN SPECIAL PROVISION (STONE FILL, STREAM BED MATERIAL) (TYPE III)
BEGIN UNCLASSIFIED CHANNEL EXCAVATION
BEGIN GEOTEXTILE UNDER STONE FILL
BEGIN STONE FILL TYPE III
BEGIN GRUBBING MATERIAL

20+75



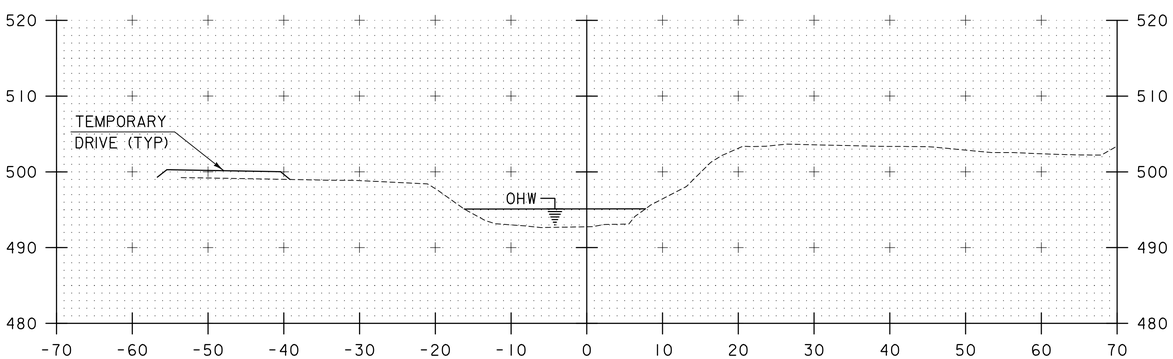
20+00



STA 20+42.21, LT
END UNCLASSIFIED CHANNEL EXCAVATION
END STONE FILL TYPE III
END GRUBBING MATERIAL

20+50

STA 20+34.87, RT
END UNCLASSIFIED CHANNEL EXCAVATION
END STONE FILL TYPE III
END GRUBBING MATERIAL



19+75

STA. 19+75 TO STA. 20+75

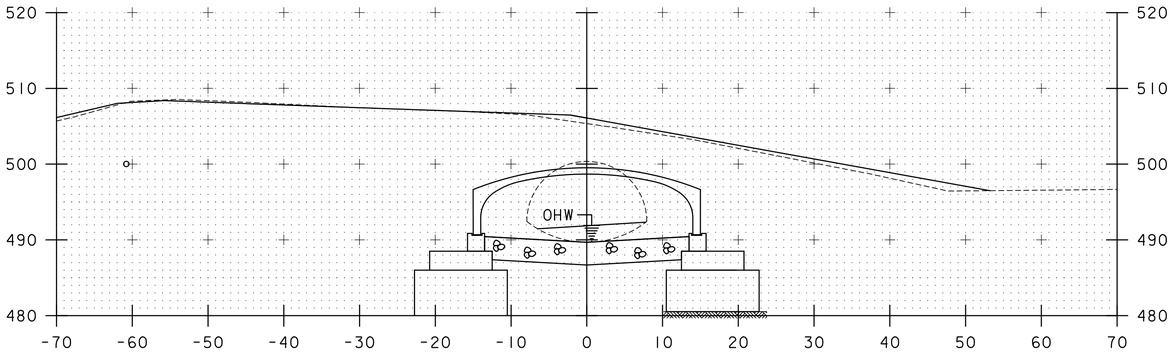
FOR REVIEW ONLY
NOT FOR CONSTRUCTION

T.Y.LIN INTERNATIONAL

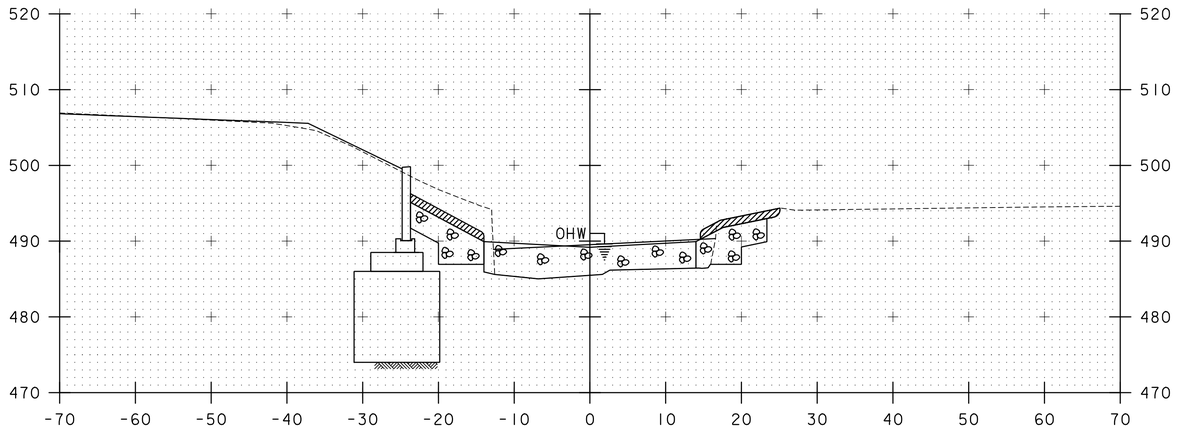
PROJECT NAME: DUXBURY
PROJECT NUMBER: BF 013-4(47)

FILE NAME: z16b001xschan.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: B. TOOTHAKER
CHANNEL SECTIONS I

PLOT DATE: 5/20/2016
DRAWN BY: B. TOOTHAKER
CHECKED BY: D. MYERS
SHEET 54 OF 69



21+50

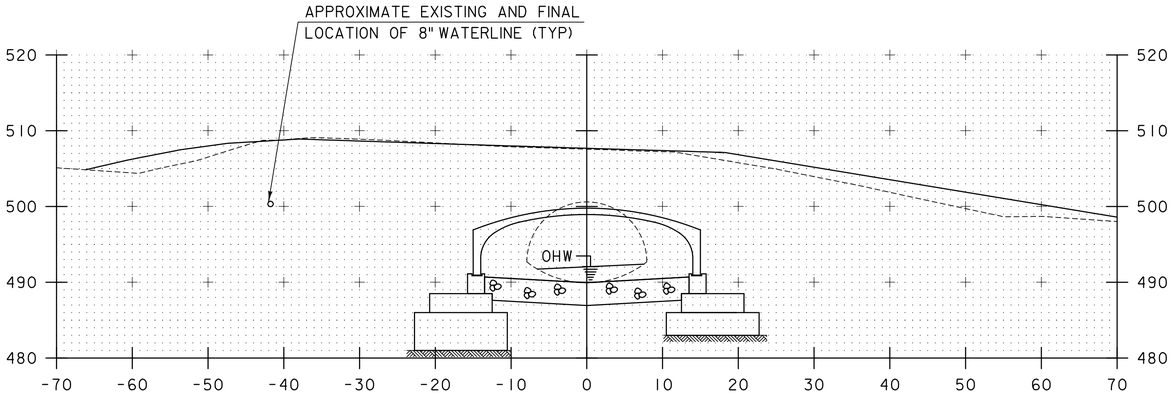


STA 21+79.00, LT
BEGIN UNCLASSIFIED CHANNEL EXCAVATION
BEGIN STONE FILL TYPE III
BEGIN GRUBBING MATERIAL

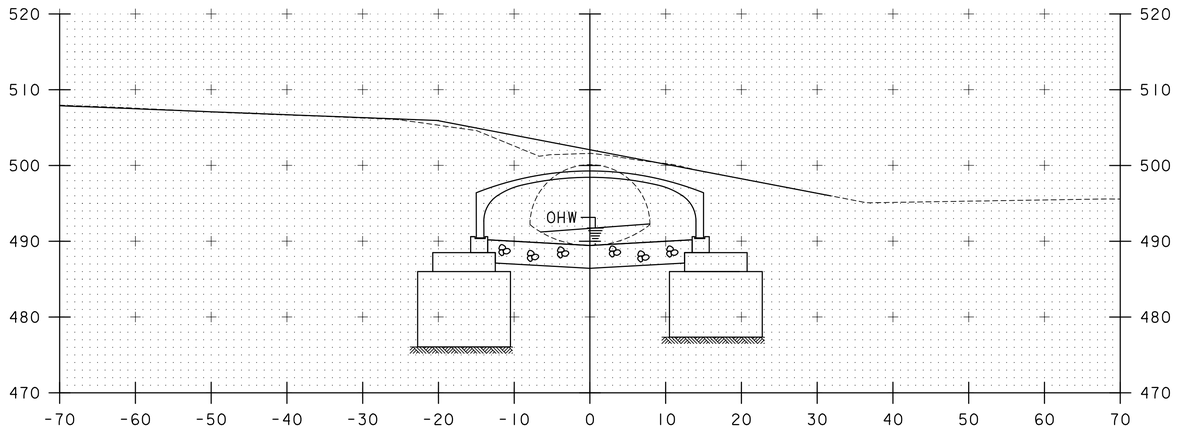
22+00

STA 21+75.71, RT
BEGIN STONE FILL TYPE III
BEGIN GRUBBING MATERIAL

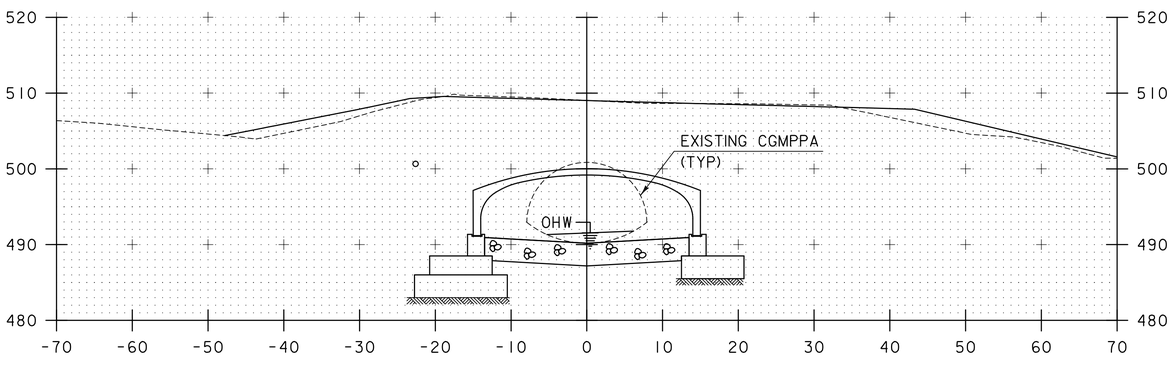
STA 21+79+00, RT
BEGIN UNCLASSIFIED CHANNEL EXCAVATION



21+25



21+75



21+00

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

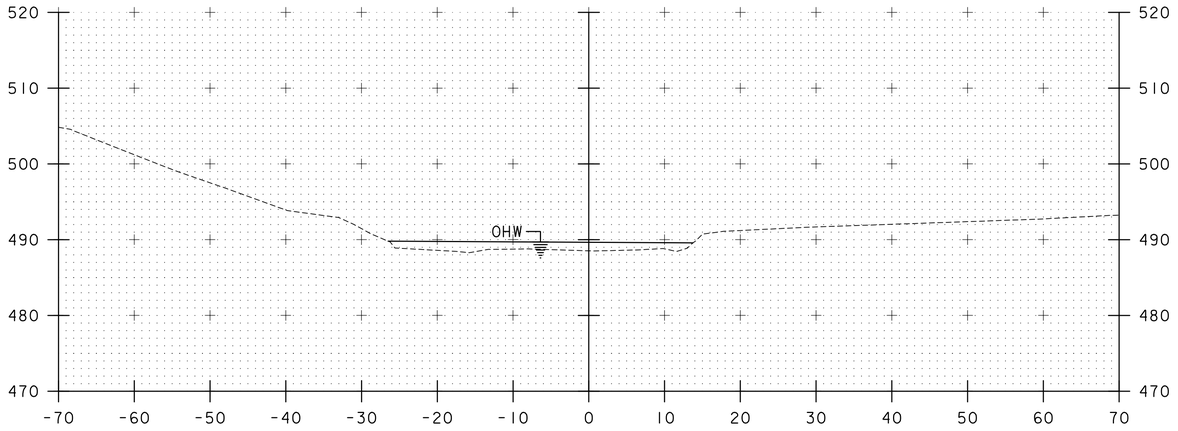
STA. 21+00 TO STA. 22+00

T.Y.LIN INTERNATIONAL

PROJECT NAME: DUXBURY
PROJECT NUMBER: BF 013-4(47)

FILE NAME: z16b001xschan.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: B. TOOTHAKER
CHANNEL SECTIONS 2

PLOT DATE: 5/20/2016
DRAWN BY: B. TOOTHAKER
CHECKED BY: D. MYERS
SHEET 55 OF 69

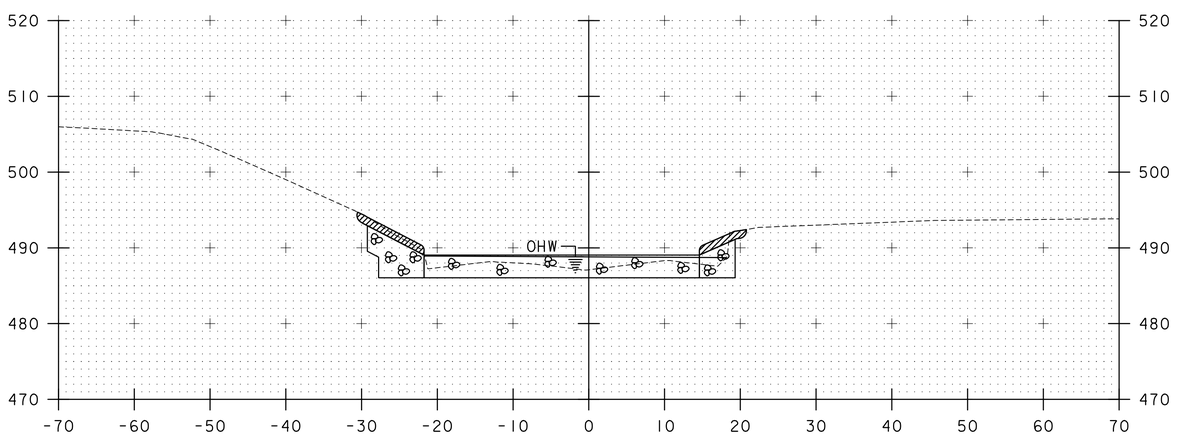


22+50

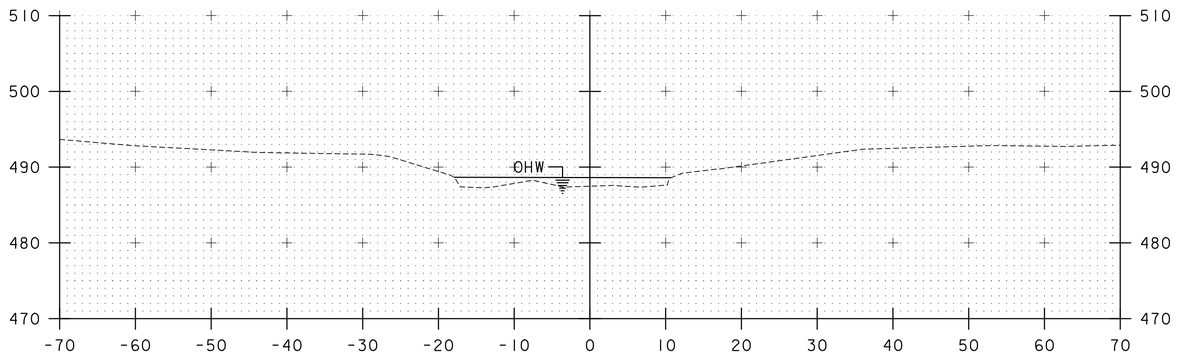
STA 22+32.39, LT
END UNCLASSIFIED CHANNEL EXCAVATION
END GEOTEXTILE UNDER STONE FILL
END STONE FILL TYPE III
END GRUBBING MATERIAL

STA 22+32.39, LT & RT
END SPECIAL PROVISION
(STONE FILL, STREAM BED
MATERIAL) (TYPE III)

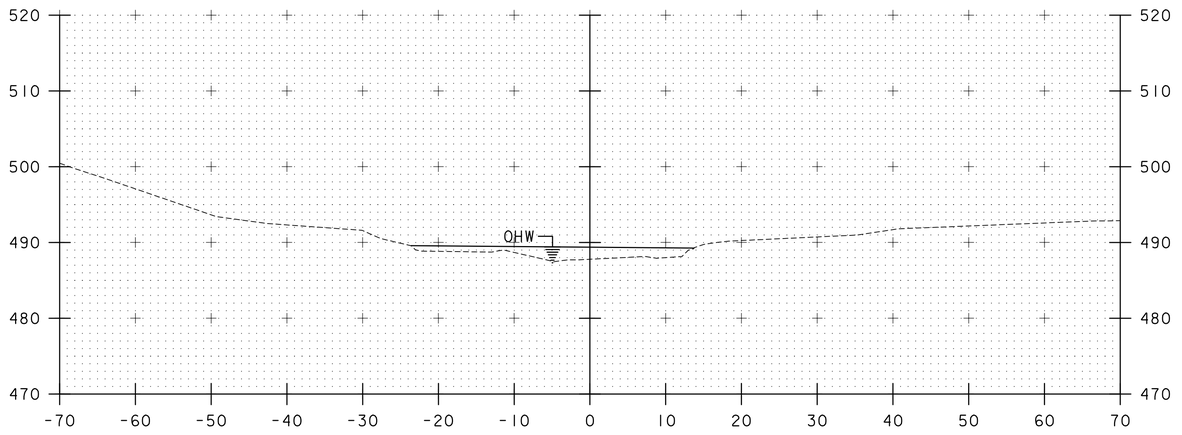
STA 22+32.39, RT
END UNCLASSIFIED CHANNEL EXCAVATION
END GEOTEXTILE UNDER STONE FILL
END STONE FILL TYPE III
END GRUBBING MATERIAL



22+25



23+00



22+75

NOTE: TEMPORARY BRIDGE AND ROADWAY NOT SHOWN

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

STA. 22+25 TO STA. 23+00

T.Y. LIN INTERNATIONAL

PROJECT NAME: DUXBURY
PROJECT NUMBER: BF 013-4(47)

FILE NAME: z16b001xschan.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: B. TOOTHAKER
CHANNEL SECTIONS 3

PLOT DATE: 5/20/2016
DRAWN BY: B. TOOTHAKER
CHECKED BY: D. MYERS
SHEET 56 OF 69